

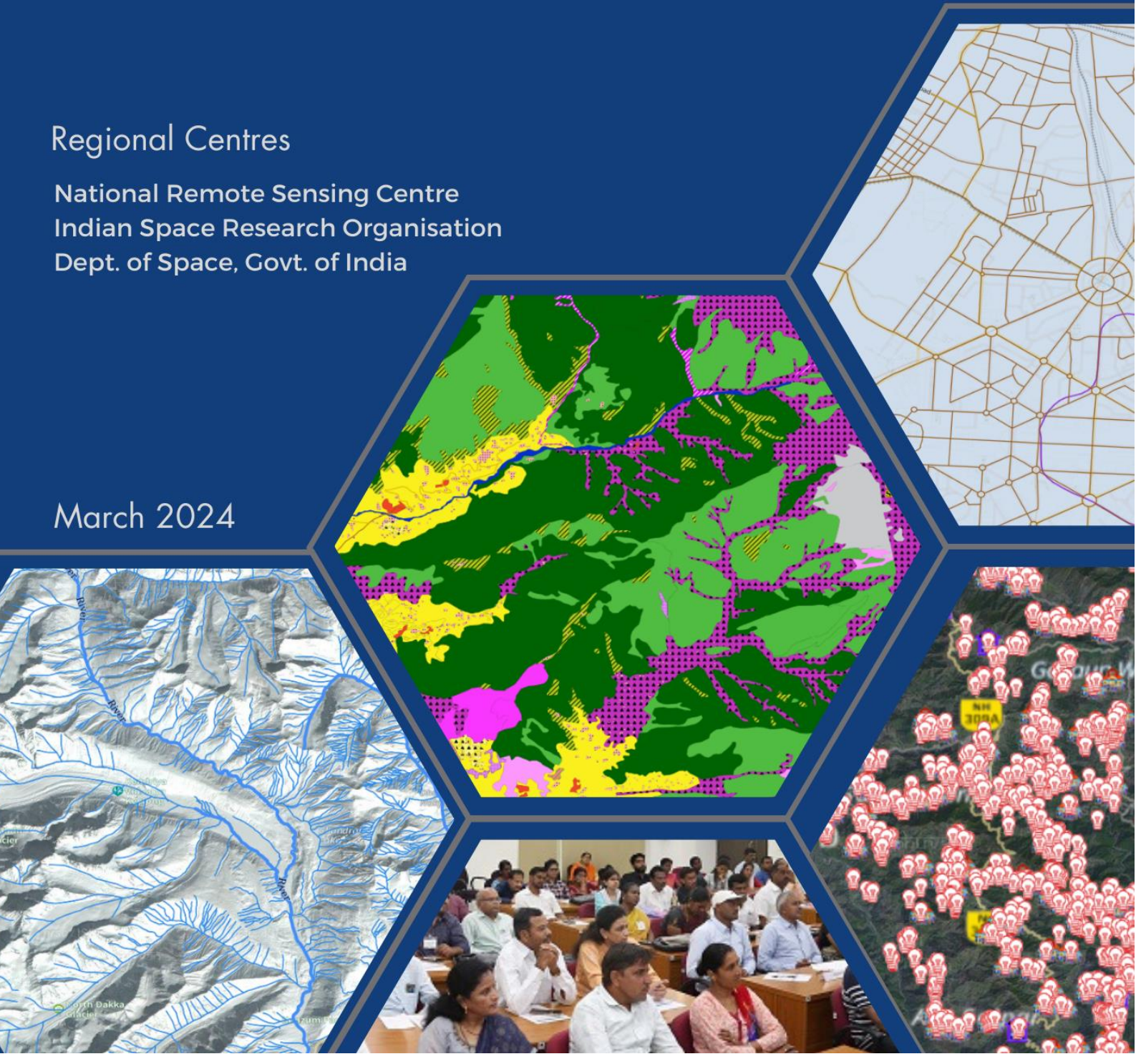
USER MANUAL FOR BHUVAN PANCHAYAT

SPACE BASED INFORMATION SUPPORT FOR DECENTRALIZED PLANNING (SIS-DP)

Regional Centres

National Remote Sensing Centre
Indian Space Research Organisation
Dept. of Space, Govt. of India

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15	<p>Abstract</p> <p>This user manual provides comprehensive guidance for navigating and utilizing the Bhuvan Panchayat Portal. Users will find detailed, step-by-step instructions on how to effectively utilize the portal's features and functionalities. This document aims to simplify the user experience and assist users in unlocking the full potential of the Bhuvan Panchayat Portal.</p> <p>Key Terms: Web portal, User manual & GIS functionalities</p>				

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1. INTRODUCTION

1.1 About SISDP:

Space Based Information Support for Decentralized Planning (SIS-DP) Project has been initiated by National Remote Sensing Centre (NRSC) of ISRO under the aegis of National Natural Resources Management System (NNRMS) and is being jointly executed by National Remote Sensing Centre and State Remote Sensing Centres of the country.

Decentralized Planning is defined as a type of planning where local organisations and institutions formulate, adopt, execute actions and supervise the plan without interference by the central body. In rural India, decentralized planning and Panchayati Raj institutions (PRIs) go hand in hand. Developmental planning must happen at the grassroots level associating the people, through their representative institution - the Panchayati Raj

To have framework for spatial planning for villages and to ensure overall integrated development SIS-DP Project has been conceived.

Aim of SIS-DP is to Empower State Administration / Panchayati Raj institutions in use of Space based input for Developmental Planning.

SISDP-U project has achieved a major milestone of completing thematic data mapping updates for entire country at 1:10k scale. The project lead by Regional Centres, NRSC with active contribution of 27 state partner institutions, is a major initiative by NNRMS-ISRO for generation and updation of thematic data i.e. Land Use Land Cover, Drainage, Rail and Road and settlements layers for entire country. Present thematic data is well structured to support Panchayat level planning providing Level IV classification with 89 classes for LULC

SISDP-U Phase II State wise mosaic data for entire India (100% of coverage with total of 766 districts) are hosted as OGC WMS services along with new style schema supporting level IV classification. A total of 1.5 TB of thematic database of different layers and time periods are now hosted online for visualisation and supporting planning tools on Bhuvan Panchayat. The thematic data are shared with multiple Ministries, Academia and Research like IIT Kanpur, DAE etc apart from open to public. Data & Services are also integrated as mashups into Gramanchitra and Matrubhoomi portals of NIC. Data downloads for public is now activated through Bhuvan services.

1.2 Overview

The SISDP portal (<https://bhuvanpanchayat.nrsc.gov.in>) serves as the central hub for accessing critical information, data, and resources related to the SISDP project (Figure 1). It is connected to the Bhuvan Panchayat Portal which is a comprehensive online platform designed to empower Panchayati Raj Institutions (PRIs) and stakeholders with geospatial data and spatial planning tools for decentralized planning and governance.

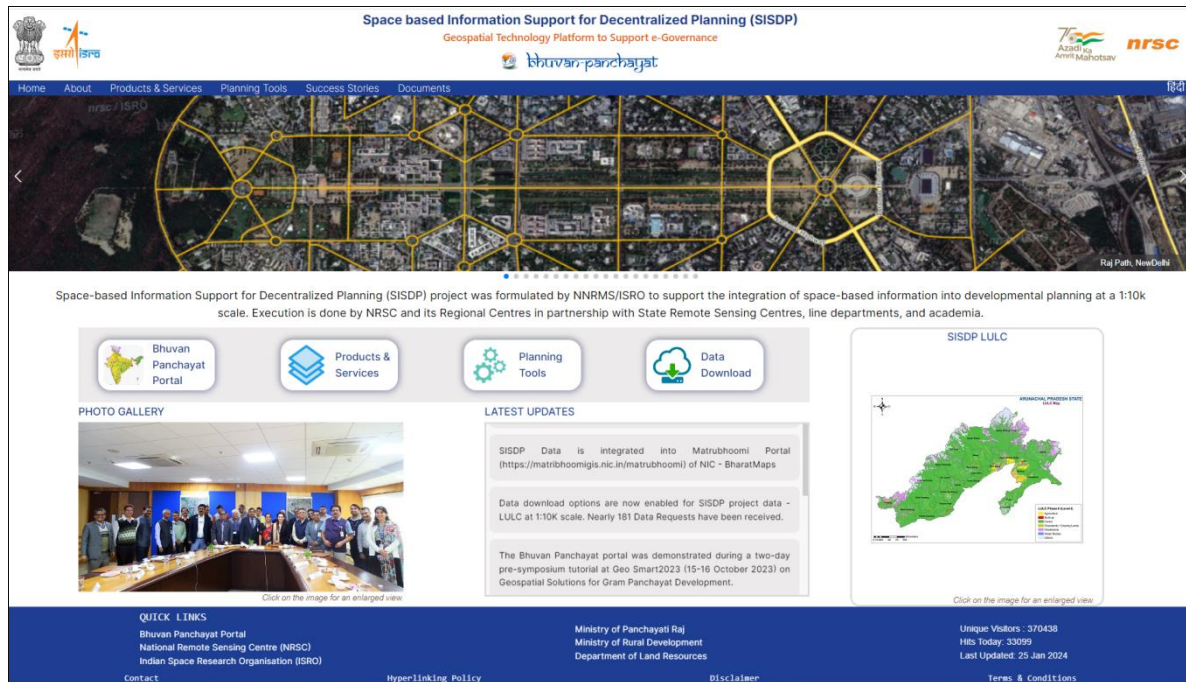


Figure 1 Snapshot of SISDP landing page

1.3 Key Features of the SISDP Portal

- **SISDP Project Information:** The portal provides detailed information about the SISDP project, including its objectives, and its significance in supporting decentralized planning and governance. Users can gain a comprehensive understanding of the project's mission and goals.
- **Products and Services:** Users can gain insights into a variety of geospatial products and services available under the SISDP project.
- **Bhuvan Panchayat Integration:** The SISDP Portal seamlessly integrates with Bhuvan Panchayat, a dedicated Geoportal that allows users to explore and analyze geospatial data with ease. It provides access to a wide range of geospatial information, maps, and tools for effective planning at Panchayat level.
- **Data Download Portal Link:** For users who require specific datasets, the portal is linked to a dedicated Data Download Dashboard. Users can find and download the data they need for planning, governance, research or any other activities.

- **Gallery Section:** The portal features a Gallery section showcasing event photos and visual resources related to the SISDP project. This section provides users with a visual insight into the project's activities and achievements.
- **News and Updates:** Stay informed about the latest developments in the SISDP project through the News section. Users can access news articles, announcements, and updates related to the project's progress and initiatives.

2. NAVIGATING THE PORTAL

2.1 Navigation Bar

The navigation bar serves as your gateway to different sections of the SISDP Portal, providing a user-friendly way to explore its diverse features and information. It consists of six menu options (Figure 2), each uniquely designed to cater to specific aspects of the portal. By clicking on a menu item, users can effortlessly navigate to the corresponding section of the webpage. Here's a brief overview of each menu option:



Figure 2 Navigation bar

- **Home:**
Clicking on the "Home" menu item will lead you to the main landing page. Here, you'll find an image slider showcasing essential data products, quick link cards for easy access to key sections, a photo gallery capturing recent events, the latest updates on the project, and an Atlas section featuring thematic maps.
- **About:**
Click on "About" to gain a deeper understanding of the project's mission. The "About" section provides comprehensive information about the SISDP project, covering its goals, objectives, project team members, focal points, and partner institutions.
- **Services:**
Click on "Services" to explore thematic data products. Additionally, find a link to the Data Download Portal to download specific datasets. This section also features a QGIS WMS link icon, allowing users to connect to the SISDP WMS link in QGIS.
- **Planning Tools:**
The "Planning Tools" section introduces two essential tools: the Land Resources Development Plan Tool and the Water Resources Development Plan Tool. Click on this menu item to discover how these tools facilitate effective planning at the grassroots level.

- **Success Stories:**

Click on "Success Stories" to access case studies and learn about the positive impact of the project on various initiatives. This section showcases successful projects that leveraged SISDP data.

- **Documents:**

Click on "Documents" to access Help manuals and the SISDP Project Atlas. Help Manual documents are uploaded to assist users in navigating the portal. The Atlas section provides a visual narrative of the SISDP project through our dedicated Atlas. Thematic maps and snapshots in the atlas offer a visual representation of the geographical dynamics of the SISDP project.

- **Hindi:**

Click on the "Hindi" tab to access the Hindi version of the Bhuvan Panchayat portal.



Figure 3 Hindi version of Bhuvan Panchayat

2.2 Quick link cards

The Quick Link Cards section consists of four cards (Figure 4) for the ease of user access:

- **Card1 : Bhuvan Panchayat**

This card seamlessly integrates with the Bhuvan Panchayat Geoportal, enabling users to explore and analyze a wide range of geospatial information, maps, and tools for effective planning.

- **Card 2: Products & Services**

The second card directs users to the Data Products and Services section, providing a quick overview of SISDP products.

- **Card 3: Planning tools**

The third card takes users to the Planning Tools section of the SISDP webpage.

- **Card 4: Data Download**

This card allows users to visit the Data Download Portal directly. By using their Bhuvan login credentials, users can download data directly.

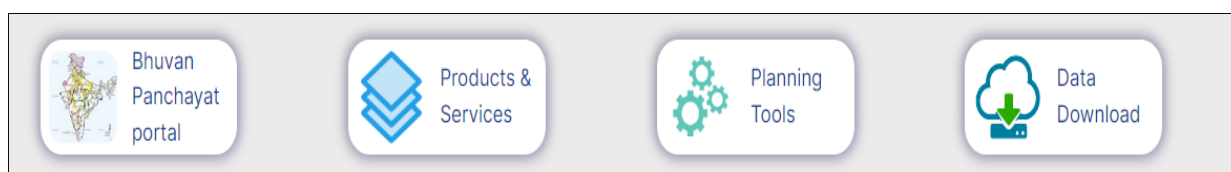


Figure 4 Quick link cards

These quick link cards are designed to streamline user navigation, providing convenient shortcuts to key sections of the SISDP Portal.

3. SECTIONS IN SISDP PORTAL

3.1 Landing Page

- **Image Slider:** Our dynamic image slider showcases the diverse data products of the SISDP project. Simply slide through captivating visuals, providing a comprehensive overview of the SISDP project's data products.
- **Quick Link Cards:** Utilize our user-friendly Quick Link Cards for swift access to essential information. Each card serves as a direct link to a specific section, ensuring you navigate with ease.
- **Photo Gallery:** Immerse yourself in the vibrancy of our project events with our captivating Photo Gallery. Gain a visual perspective on ongoing activities and achievements. Each image tells a story of the SISDP project's dynamic journey.
- **Latest Updates:** Stay current with the SISDP project's progress through the Latest Updates section. Here, you'll find news and developments that keep you informed about the project's recent activities.
- **Map Slider:** Delve into the thematic maps of the SISDP project within our dedicated Atlas Section. Here, you can explore geospatial insights and gain a comprehensive understanding of the thematic data in the SISDP project. It's your visual guide to the geographical dynamics of the project. Click on the map image to view in full resolution.

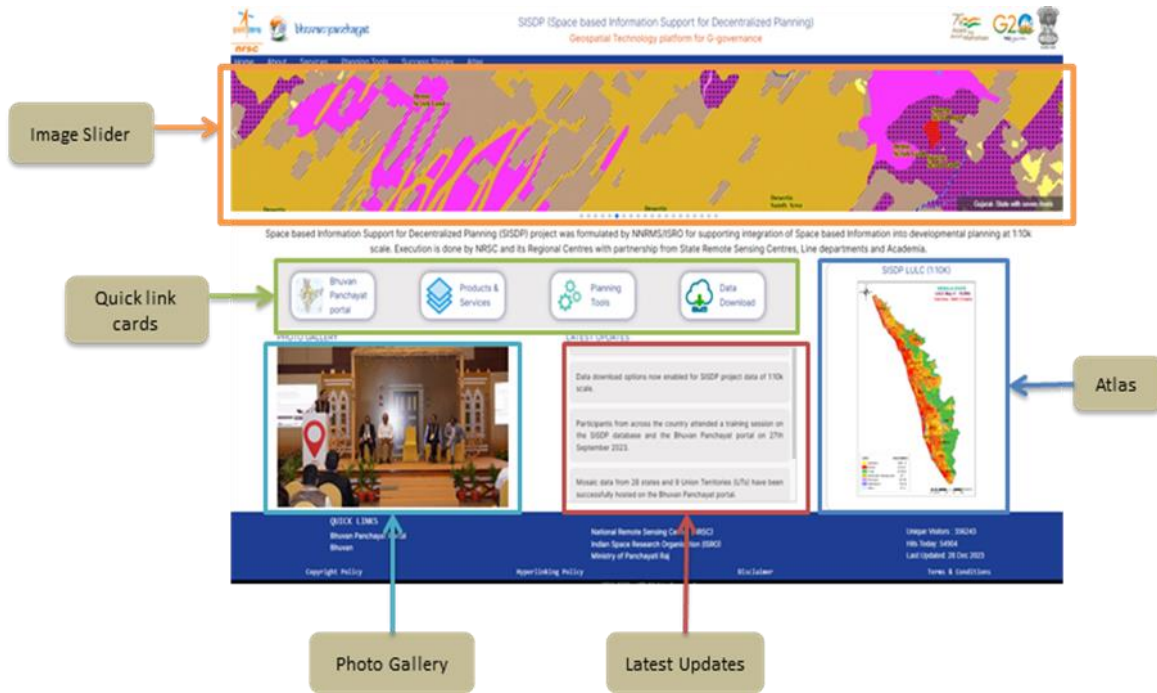


Figure 5 Sections in SISDP Landing Page

3.2 About

- Project Overview:** This section provides an in-depth overview of the project's mission and how it contributes to decentralized planning. Explore the formation, goals, and objectives that define the SISDP project (Figure 6).

The image shows a screenshot of the 'ABOUT SISDP PROJECT' tab on the SISDP website. The page has a blue header with navigation links: Home, About, Products & Services, Planning Tools, Success Stories, Documents, and a Hindi language selector. The main content area is titled 'ABOUT SISDP PROJECT' and contains the following text:

The 73rd and 74th Constitution Amendments of 1993 facilitate the realization of consistent and conscious efforts towards decentralized planning for rural and urban areas, respectively. These amendments have provided much-needed constitutional legitimacy to local governance institutions, defined their functional domains and provided financial devolution to these institutions. The Space-based Information Support for Decentralized Planning (SISDP) project was formulated by NRSC and was implemented in partnership with State Remote Sensing Application Centres in the country to provide basic planning inputs derived from satellite data. The major deliverables, viz., satellite image of 2.5 m resolution for the entire country and thematic maps on a 1:10000 scale, generated for the first time in the country, are extremely useful in meeting the current requirements of planning, development, implementation and monitoring activities at Panchayat / Village Level.

Goal
 "Empowering Panchayati Raj Institutions (PRIs) and the Stakeholders with Space Based Information Support for Decentralized Planning and Governance".

Objectives

- Generation of high-resolution satellite image database.
- Updation of thematic data for 2015 - 16 for the entire country at a 1:10,000 scale.
- Integration of community assets from multiple sources, including the EPRIS project.
- Generation of geospatial products and services for planning.
- Development of Bhuvan Panchayat portal with ease of use GUI and advanced spatial analytics.

Below the text is a flowchart titled 'Enable Developmental Planning Percolate to Grampanchayats'. The flowchart shows a central 'DECENTRALIZED PLANNING' box with a 'Devolution of Powers Bottom Up Approach' arrow pointing to it. The flowchart is supported by several data sources and processes:

- Geospatial Data:** Satellite Imagery (2.5 m), Land Use Land Cover, Drainage, Infrastructure, Slope, and Cadastral Data (1:4000).
- Capacity Building:** Executive Level (Regional Workshop, National Workshop), Working Level (District Workshop, Block Workshop).
- Geoportals:** Geo Visualization, Area Profile Report, Asset Mapping, Activity Planning.
- Assets Inventory:** 271 Types of Assets, Civic Assets (226), Governance (35), Productive Assets (10).
- Census 2011:** Population, Marginal Workers, Literacy Rate, Amenities, Housing Conditions.
- Climate Data (IMD):** (represented by a cloud icon).

Figure 6 SISDP overview Tab

- **Project Team:** Meet the dedicated individuals powering the SISDP project (Figure 7).
- **Focal Points:** Gain insights into the key focal points that drive the SISDP project.
- **Partner Institutions:** Explore our collaborative network of partner institutions that play a crucial role in contributing to the thematic datasets of the SISDP project.



Figure 7 Project Team Tab

3.3 Services

- **Data Products:** This section provides information on various geospatial data products of SISDP project, including Land Use and Land Cover (LULC), Drainage, Infrastructure and Settlements. Refer to Figure 7 for a visual representation.
- **Data Download Portal:** A link to Data Download Portal is provided in this section for users to download specific datasets from SISDP Phase II Thematic datasets. Simply click on the provided link to access and download the data you need for your planning, research and governance activities. Detailed steps for downloading data are outlined in [Section 4.1](#).

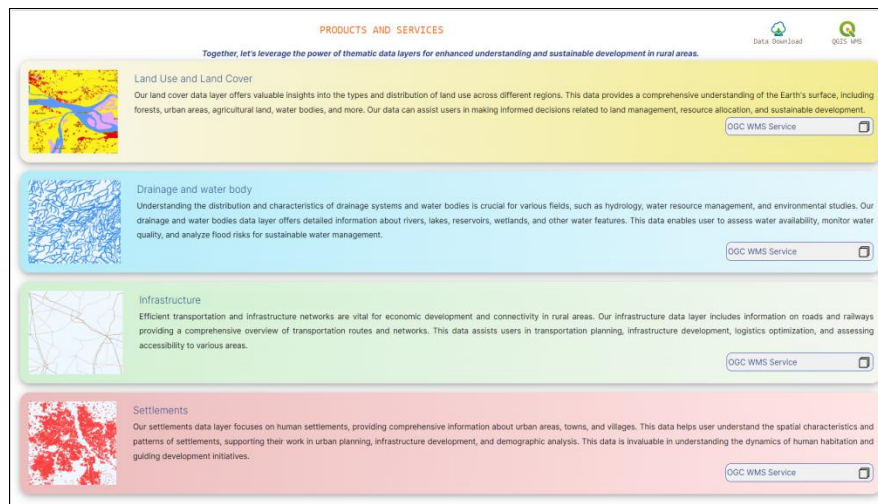


Figure 8 Products & Services section

- **WMS Services:** Discover the Web Map Service (WMS) provided by SISDP for all thematic layers. Users can seamlessly integrate the WMS link into their projects, ensuring access to real-time and accurate geospatial data. Additionally, a QGIS WMS link is available for users to visualize SISDP geospatial data directly within the QGIS software. Find the procedure to connect WMS in QGIS provided in [Section 4.2](#).

3.4 Planning Tools

Explore the "Planning Tools" section to gain valuable insights into two essential tools integrated into the Bhuvan Panchayat Portal: the Land Resources Development Plan (LRDP) Tool and the Water Resources Development Plan (WRDP) Tool. These planning tools are designed to empower users in the effective planning and management of land and water resources at the grassroots level.

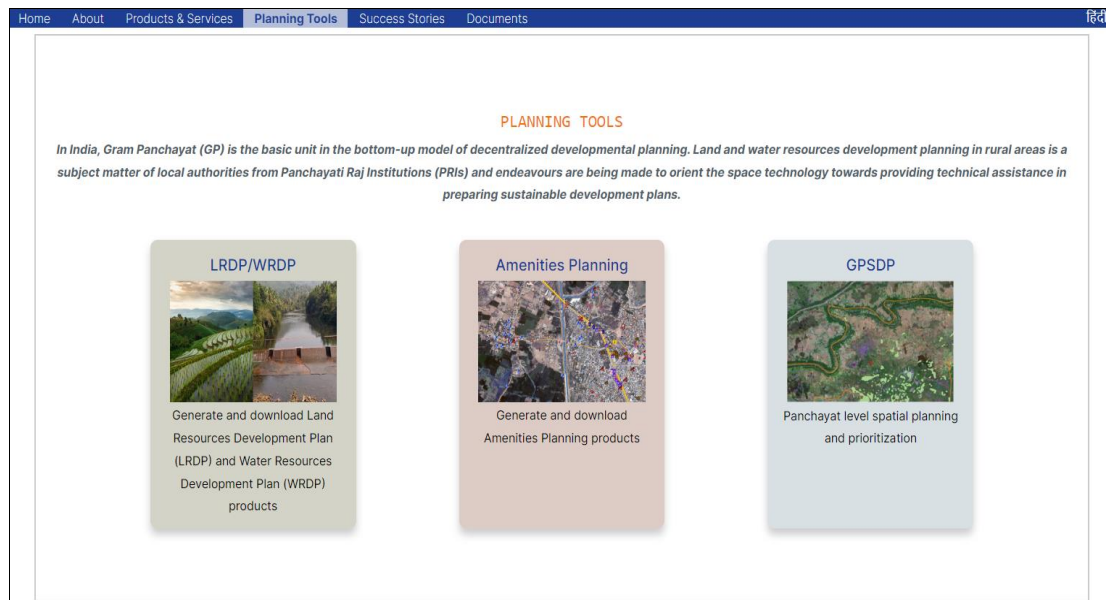


Figure 9 Planning Tools Section

In Planning tools section there are three cards- LRDP/WRDP, Amenities Planning and GPSDP.

- **LRDP/WRDP:** Click on this card to navigate to the LRDP/WRDP Tools webpage, where users can generate and download Land Resources Development Plan (LRDP) and Water Resources Development Plan (WRDP) products. The help manual for using this portal is available in the Documents section of the SISDP portal.
- **Amenities Planning:** Click on this card to plan Amenities and download Profile report for a Panchayat (Figure 10). The help manual for using Amenities Planning portal is available in the Documents section of the SISDP portal.
- **GPSDP:** Click on GPSDP card to navigate to Gram Panchayat Spatial Development Planning (GPSDP) portal, shown in Figure 11. GPSDP is a comprehensive tool designed for effective Panchayat planning. Utilizing data gathered from household surveys conducted across 35 Gram Panchayats (GPs), the portal offers a robust foundation for informed decision-making in community development.

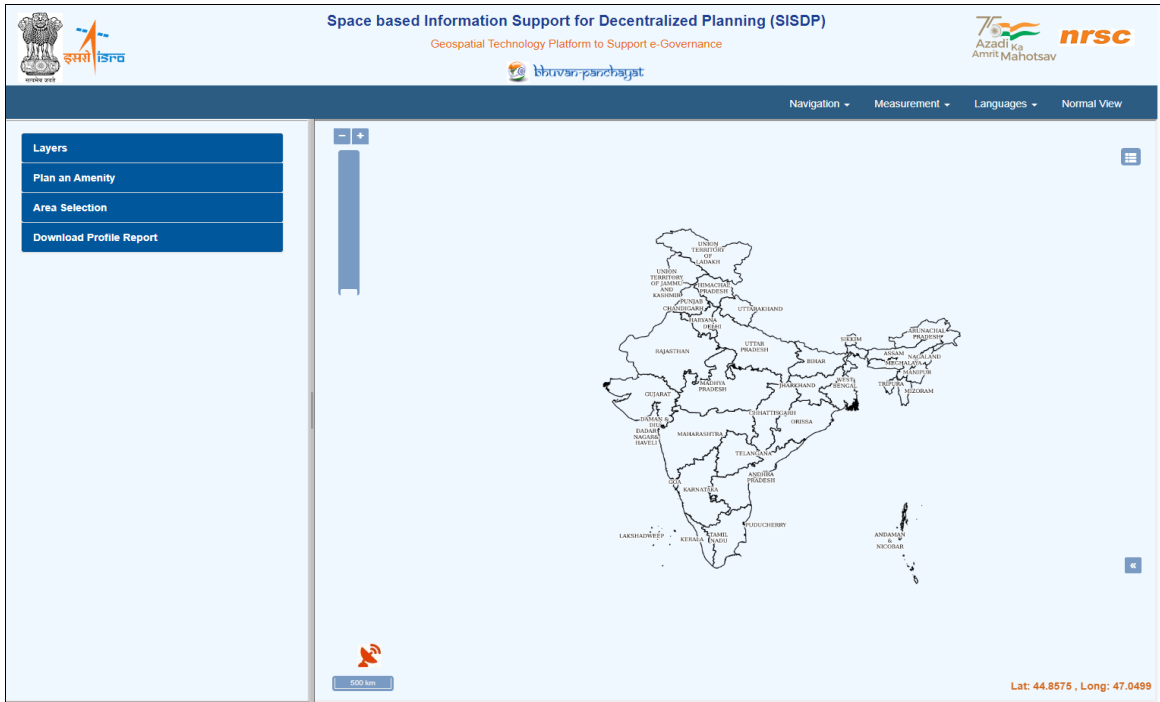


Figure 10 Amenities Planning portal

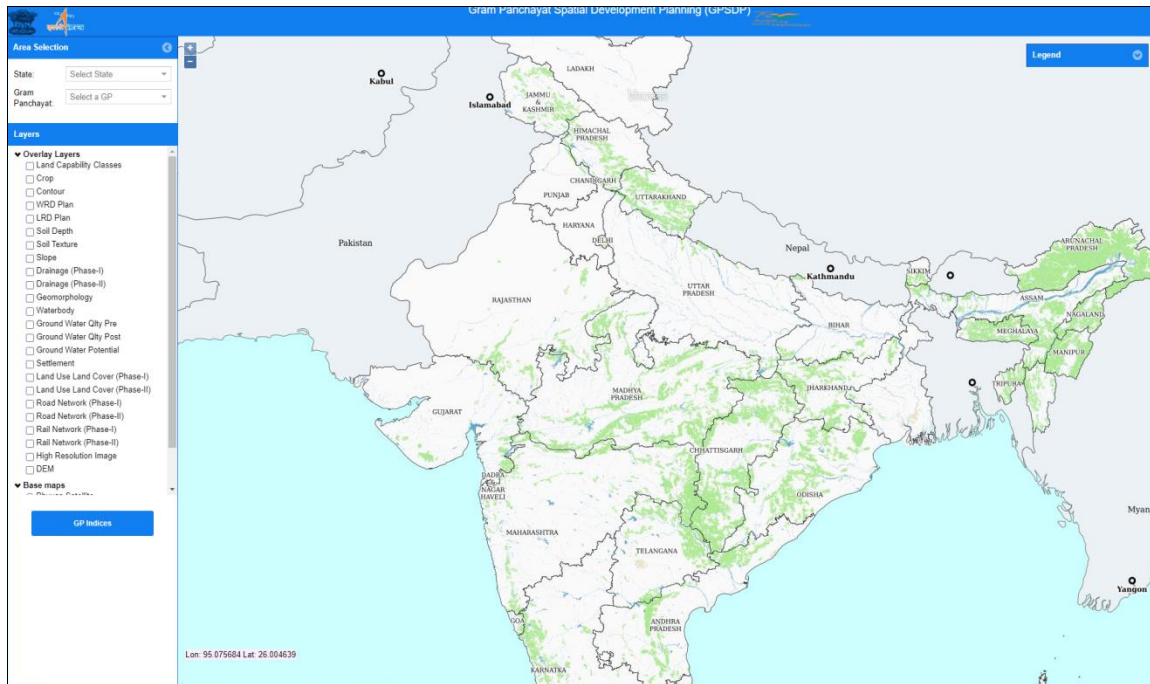


Figure 11 GPSDP portal

3.5 Success Stories

In the "Success Stories" section, we showcase a selection of projects that have leveraged SISDP data and planning tools for resource management and spatial planning activities. These success stories provide real-world examples of how our geospatial insights have made a positive impact on various initiatives. Click on "Read more" buttons to read more about a particular case study. Use "Click here for more Information" button to know more on SISDP data users.

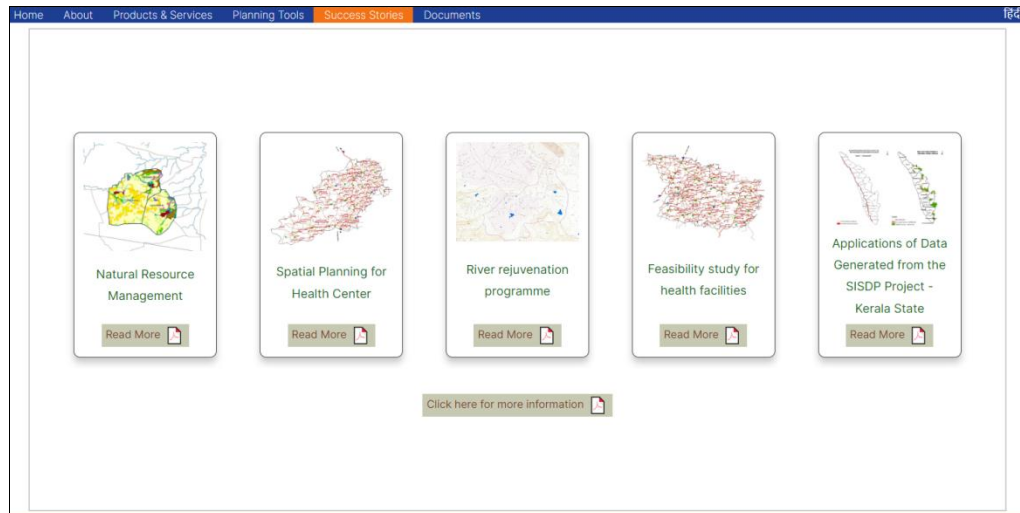


Figure 12 Success Stories section

3.6 Documents

Navigate through the Documents section to access Help manuals for each portal under the SISDP project. This section also showcases the SISDP project atlas, where thematic maps and snapshots provide a vivid representation of the geographical dynamics of the SISDP project.

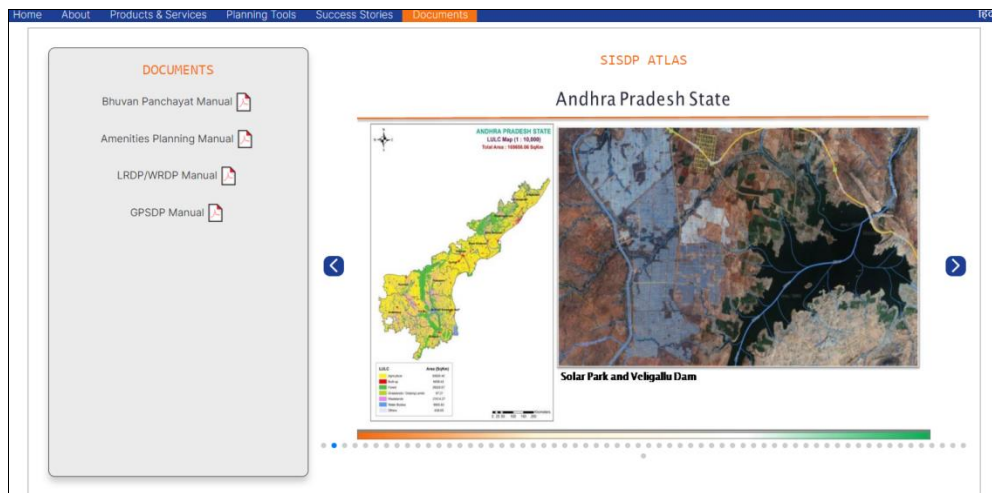


Figure 13 Documents Section

4. DATA DOWNLOAD

4.1 Data download in Shapefile format

Follow the steps below to download SISDP Phase-II data using Bhuvan login credentials.

1. Click “Data Download” card (Highlighted in Figure 11) on the SISDP Homepage (<https://bhuvanpanchayat.nrsc.gov.in>). Another way to navigate to the data download dashboard is by clicking on the "Data Download" button in the Services section. In either case, users can access the SISDP data download dashboard.



Figure 14 Data download Quick link

2. Bhuvan Single Sign on Page appears. Login to the data download portal using Bhuvan login credentials. If user doesn't have an account on Bhuvan, they can create a new account and then login to the portal. On successful login, the Data download dashboard appears (Figure 12).

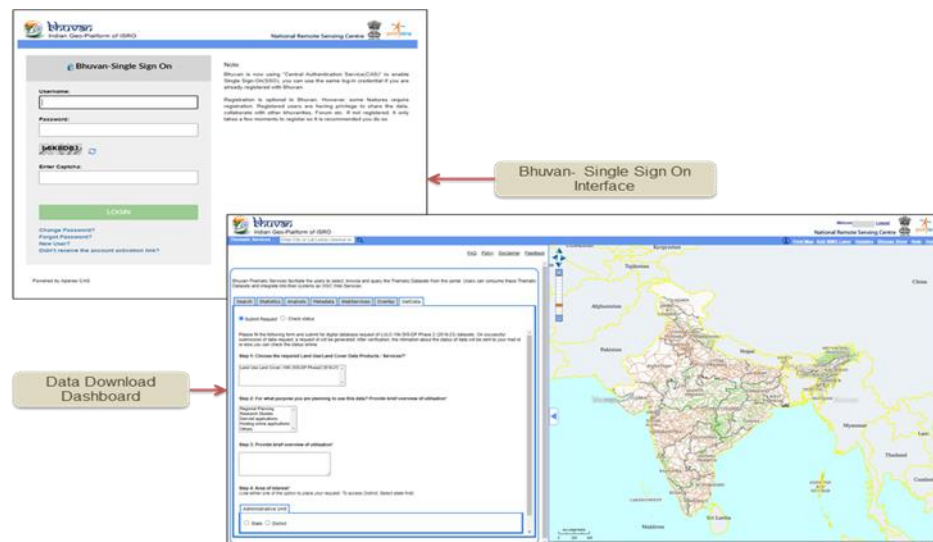


Figure 15 Snapshots of Bhuvan sign-on interface and Data download page

- Navigate to GetData section, fill in the required data, select the Area of Interest and click Submit. Figure 13 shows a sample input for downloading data.

The screenshot shows the 'GetData' section of the Bhuvan-Thematic Services portal. It is divided into four steps:

- Step 1: Choose the required Land Use Land Cover Data Products / Services?** A dropdown menu is selected with 'Land Use Land Cover (10k):SISDP Phase2'. Callout: 'Select Land Use Land Cover (10k):SISDP Phase2'.
- Step 2: For what purpose you are planning to use this data? Provide brief overview of utilisation'** A dropdown menu is selected with 'Regional Planning'. Callout: 'Select purpose of data usage'.
- Step 3: Provide brief overview of utilisation'** A text input field contains 'Provide Overview of utilization (minimum 50 characters)'. Callout: 'Provide Overview of utilization (minimum 50 characters)'.
- Step 4: Area of Interest*** (Use either one of the option to place your request. To access District, Select state first)
 - Initial state: 'Administrative Unit' with 'State' selected. A dropdown menu shows 'MANIPUR', 'MEGHALAYA', 'MIZORAM', 'TAMIL NADU'. Callout: 'Click on State button and select a state'.
 - After selection: 'District' is selected. A dropdown menu shows 'EAST GARO HILLS - MEGHALAYA', 'EAST KHASI HILLS - MEGHALAYA', 'JAINTIA HILLS - MEGHALAYA'. Callout: 'Select Required Districts'.
 - Bottom: A 'Submit Request' button. Callout: 'Click Submit Request'.
 - Red text below button: 'Please select any State to view District Names'.

Figure 16 GetData section

- Once the request is submitted, a Request ID is generated (Figure 14). Click on the Check Status button to know the status of the request using the request ID (Figure 15).

The screenshot shows the 'Check status' page. At the top, 'Submit Request' is unselected and 'Check status' is selected. The main content area displays a green message: "Your request is submitted successfully. Please note that your request id is 163. Once the data is ready for download, you will be intimated through email.."

Figure 17 Request ID generation

The screenshot shows the 'Check status' page with the 'Check status' radio button selected. Below it is a table titled "Status of the request".

Request Id	MOU Status	Date of Request	Date of Delivery	Remark
7	Pending	26-10-2023	02-11-2023	-
8	Pending	26-10-2023	--	-
69	Pending	09-11-2023	--	-
163	Pending	27-12-2023	29-12-2023	-

Figure 18 Status of the request

- Once data is ready for download, you will receive an email as shown in Figure 16. Click on the link in the mail and data download will start.

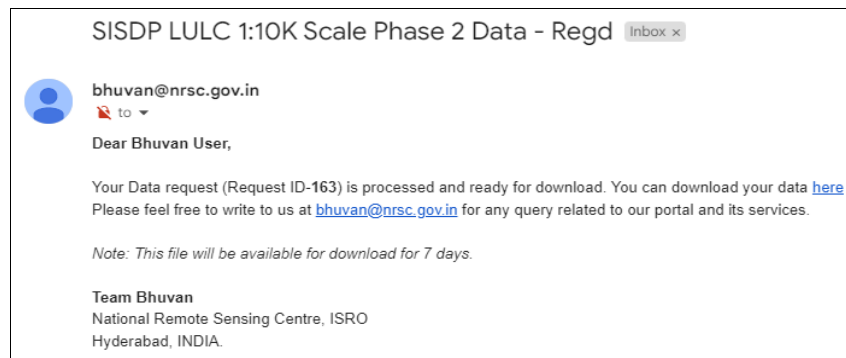


Figure 19 Data Download Mail

4.2 Using WMS Service

- In the SISDP Homepage, navigate to the Services section and click on QGIS WMS link button, highlighted in Figure 20. WMS link is copied to clipboard and a popup appears.



Figure 20 QGIS WMS link

- Open QGIS and navigate to the Data source Manager. Select WMS/WMTS option and click New (shown in Figure 21) to create a new WMS connection.

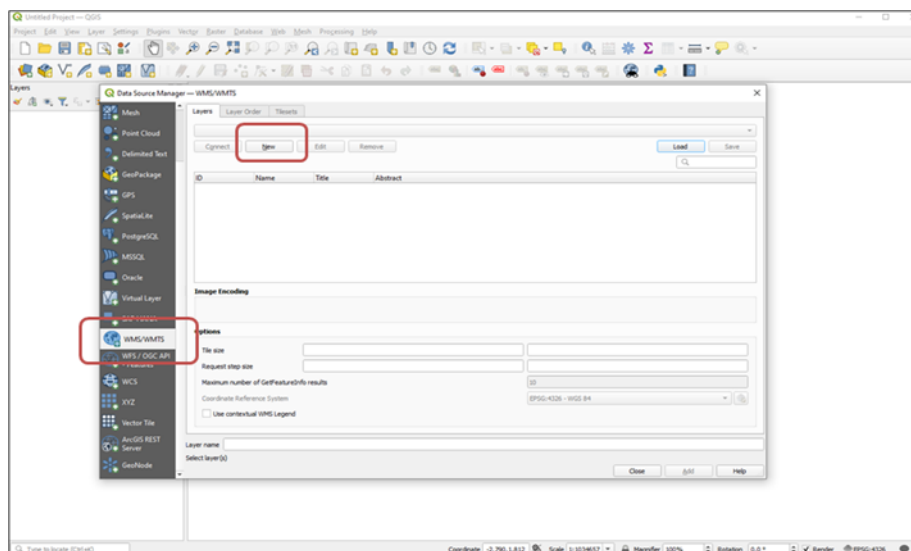


Figure 21 Data Source Manager in QGIS

- Provide a name for the connection and paste the URL copied from website (Figure 22). Click Ok.

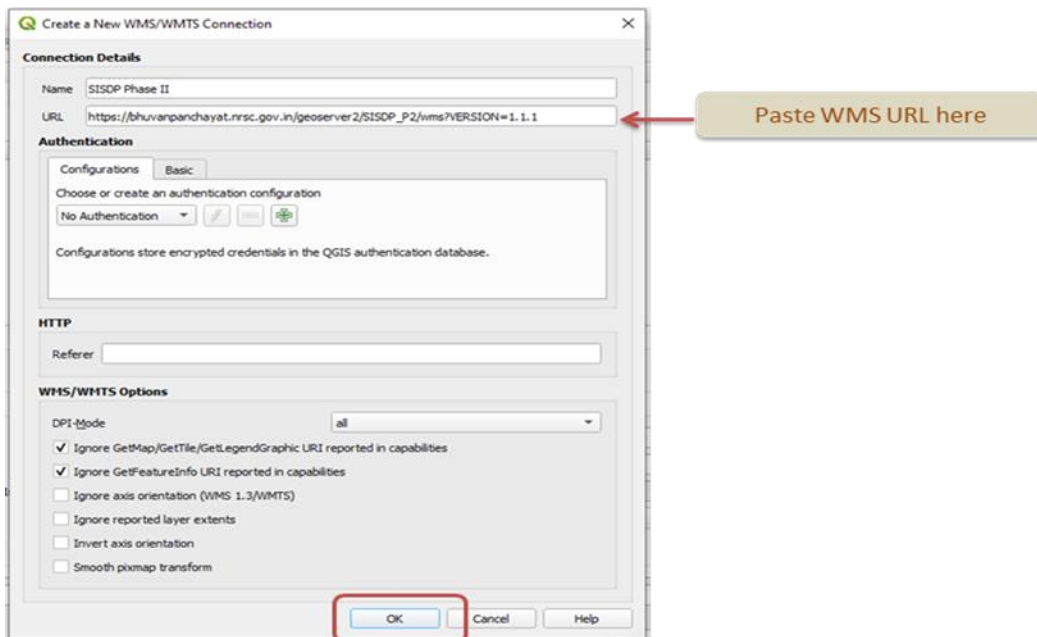


Figure 22 WMS/WMTs Connection window

- Click Connect and a list of WMS layers from SISDP Phase II appears. Select the desired layer and click add as shown in Figure 23.

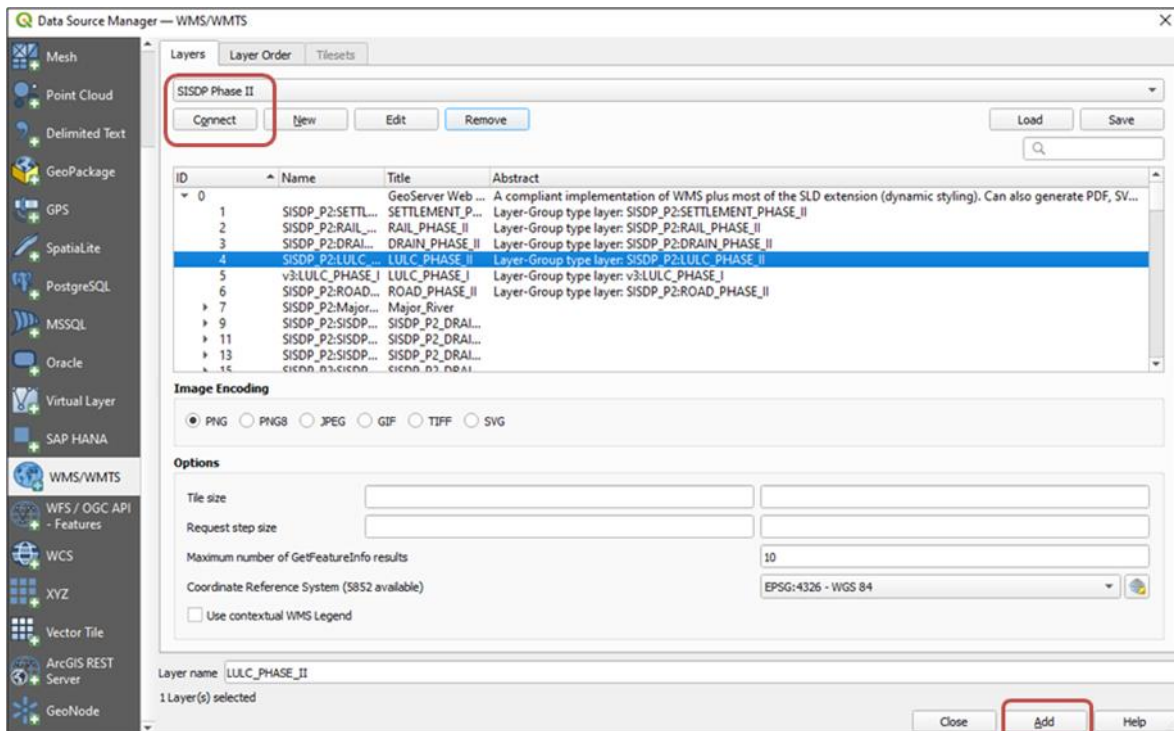


Figure 23 SISDP WMS Connection

Step 4 : Selected WMS layer is added to QGIS Map pane as shown in Figure 24.

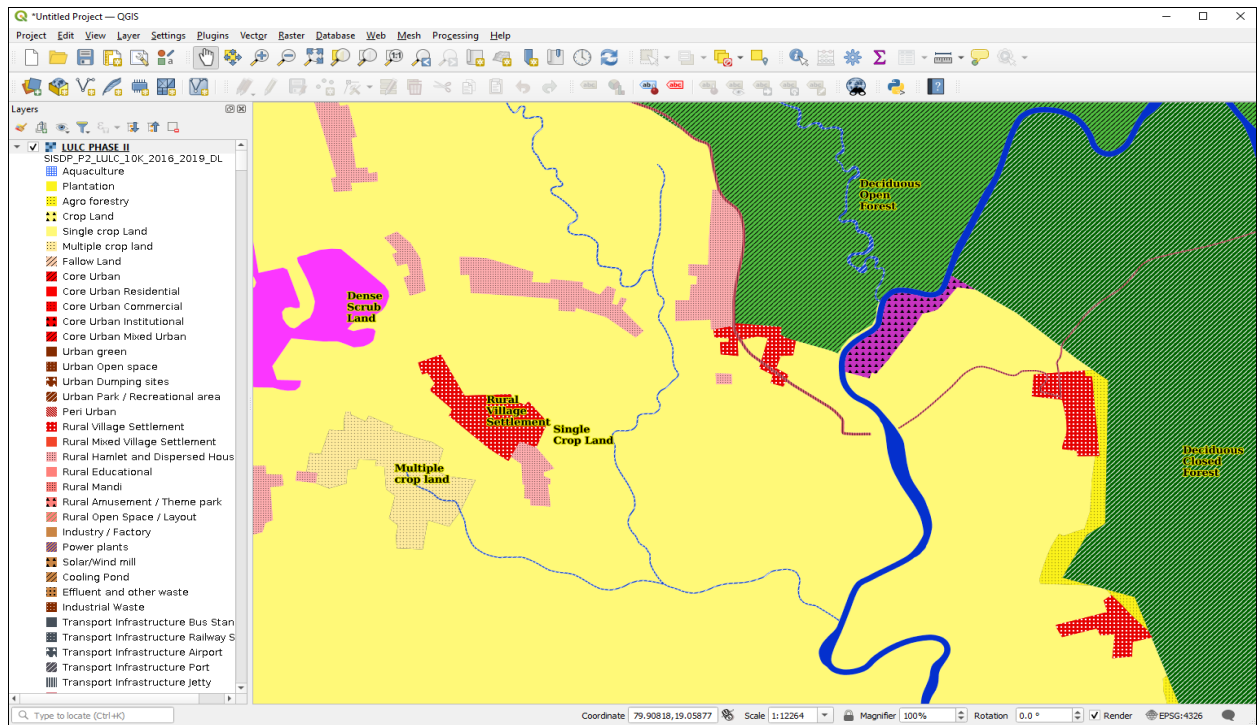


Figure 24 SISDP WMS data loaded in QGIS

5. BHUVANPANCHAYAT PORTAL

5.1 Geo-Visualisation

It refers to the use of visual elements and techniques to represent and communicate information related to geographic or spatial data. It involves the creation of visual representations of data that have a spatial component, such as maps, charts, graphs, and other graphical displays. Geospatial data, which includes information about the Earth's surface and its features, is a key component in geovisualization

5.1.1 Usage Overview

To access the Bhuvan Panchayat version 3 portal user has to access the <https://bhuvan-panchayat3.nrsc.gov.in> using any web browser. Figure 25 shows the homepage of the Bhuvan Panchayat portal.

Go to <https://bhuvan-panchayat3.nrsc.gov.in>

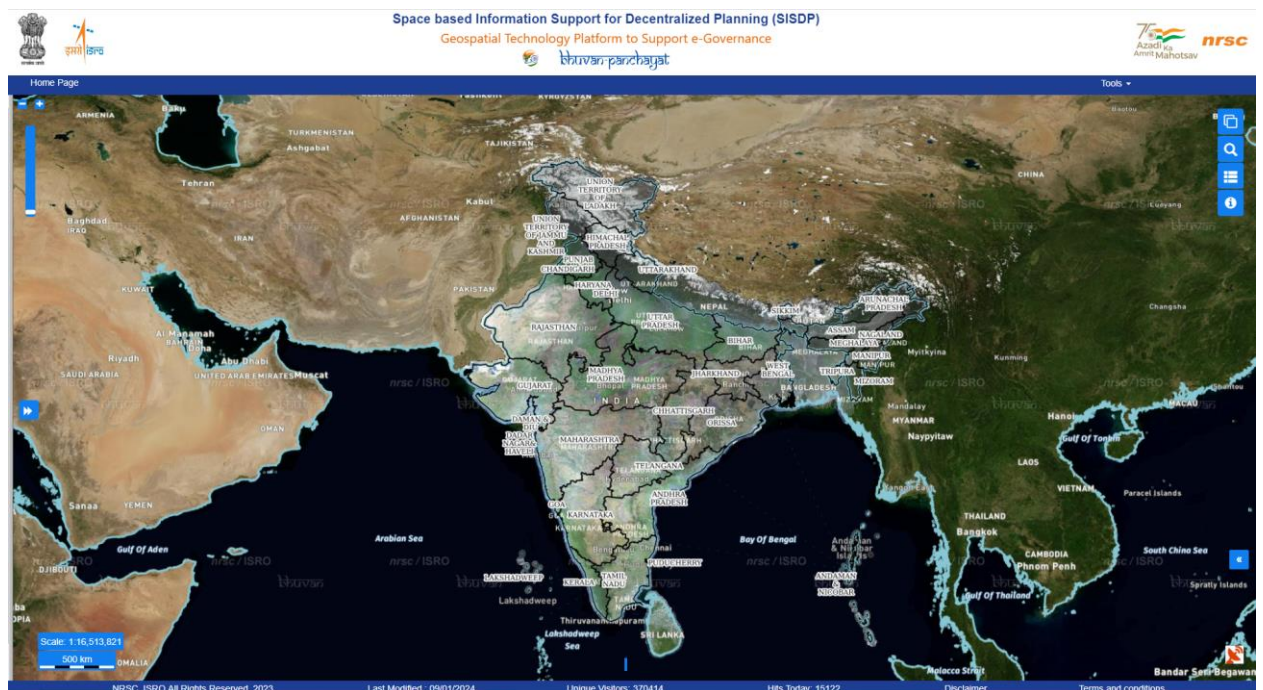


Figure 25 Bhuvan Panchayat 3.0 Homepage

Figure 25 shows the home page of portal. The portal is having four sections Accordion, Map, Header and Footer. By default when portal is opened only three sections Map, Header and Footer gets displayed to access accordion user need to click on accordion button as shown in below Figure.

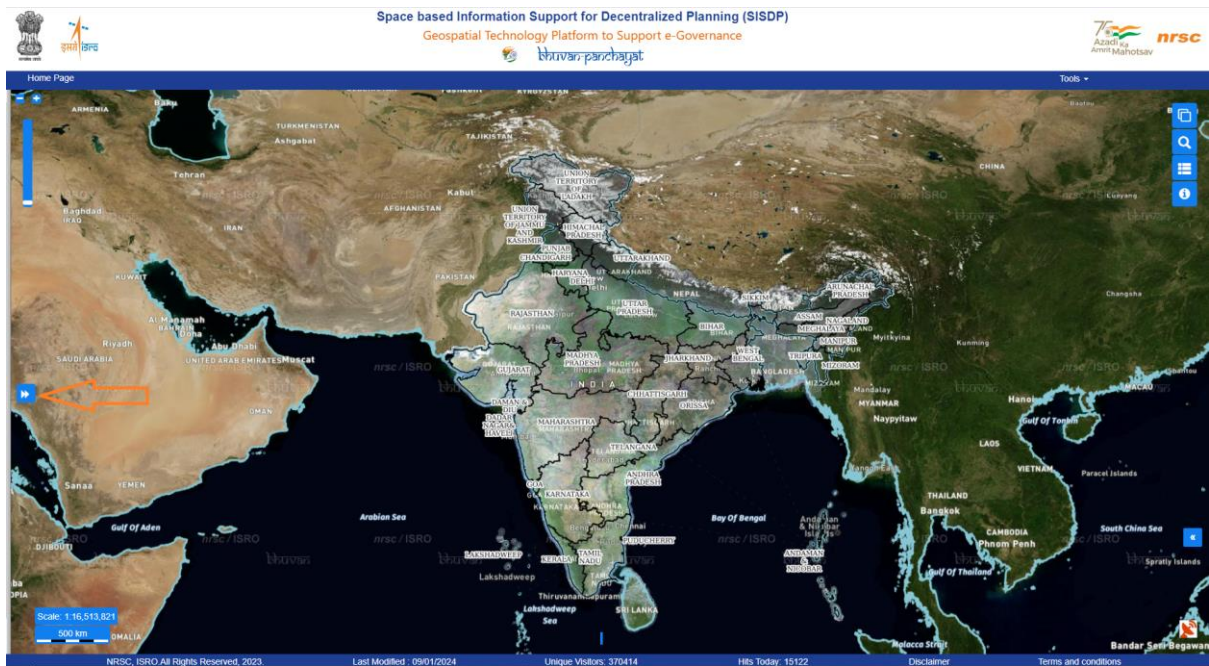


Figure 25.1 Accessing the Accordian

After accessing the accordion button user can use various options available in it such as Area Selection, Geospatial Layers, Feature Info, Area Profile, Download profile report, Plan an Activity, Assesst mapping and Visualization, Metadata, GPSDP, GPDI, Feedback, User manual, Contact us. First and foremost is Area selection we start with it and other sections are discussed at different chapters.

I. Area Selection:

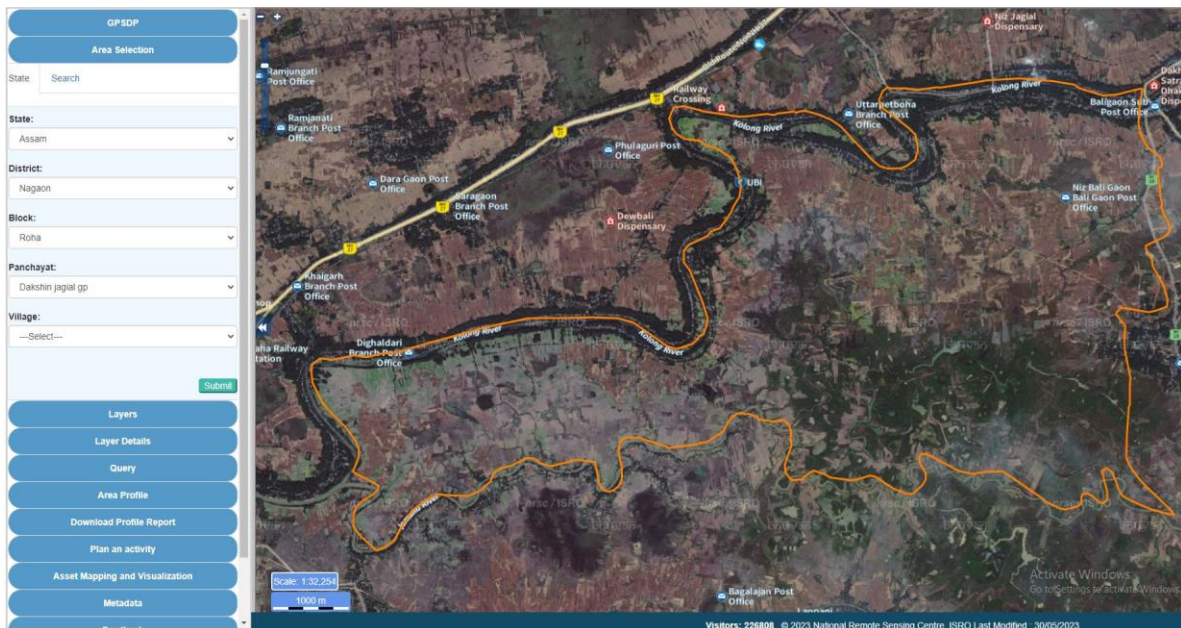
Area selection module, user can select the panchayat/area for which he wants to visualise the data. User has to select the state, district, block & panchayat and press submit, as shown in Figure 26.

Figure 26 Area Selection

For example:

- Select State: **Assam** -
- Select District: **Nagaon**
- Select Block: **Roha**
- Select Panchayat: **DakshinJagial**
- Click **Submit**

Press of submit, process the request and navigates to that particular area as shown in Figure 27.



II. Area selection using Search tool:

Area selection can also be done using the search tool, where the user can provide location/area in the search toolbox. Place name matching to the input provided get populated as shown in Figure 28.



Figure 28: Area selection using search tool

For example:

-Select

Place: **Assam**

-We can see the list of places select the required place. -Click **Submit**

- To search other areas further, click **Clear** and proceed.

III. Navigation Tools:

For ease of using the portal different tools has been developed and integrated onto the GIS viewer. Figure 29 A, B & C shows the zoom box, zoom in, zoom out tools of navigation toolbox.

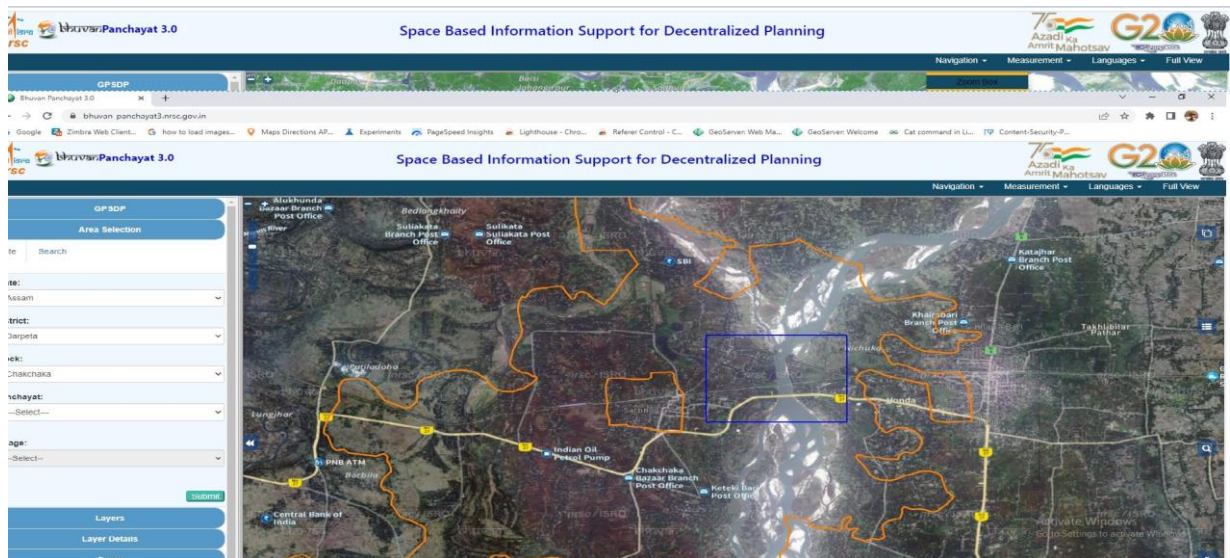


Figure 29 A : Zoom box tool

Zoom Box will enable the user to zoom to a place with the help of rectangle drawn on the map and the result will cover only those places falling in the rectangle.

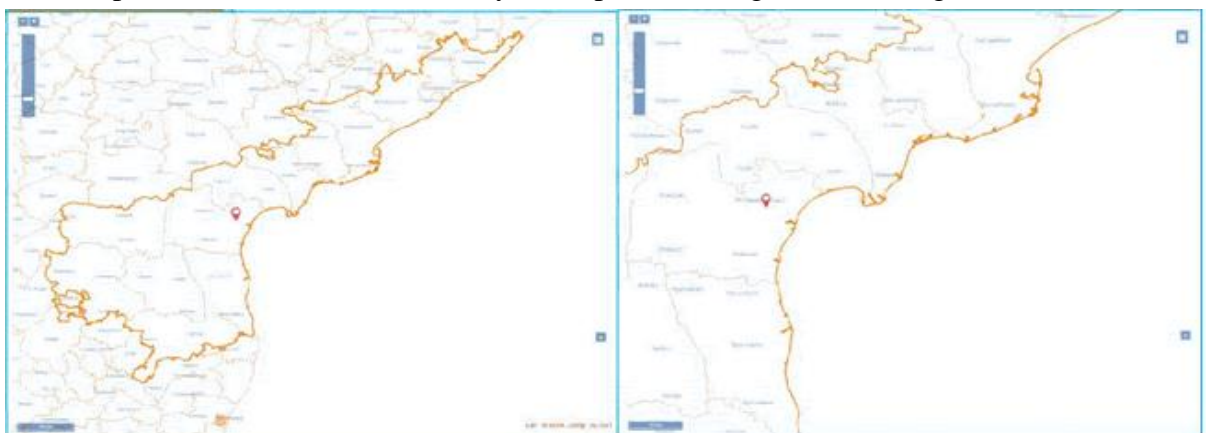


Figure 29 B : Zoom in tool

Zoom In will enable the user to zoom in to one next zoom level.

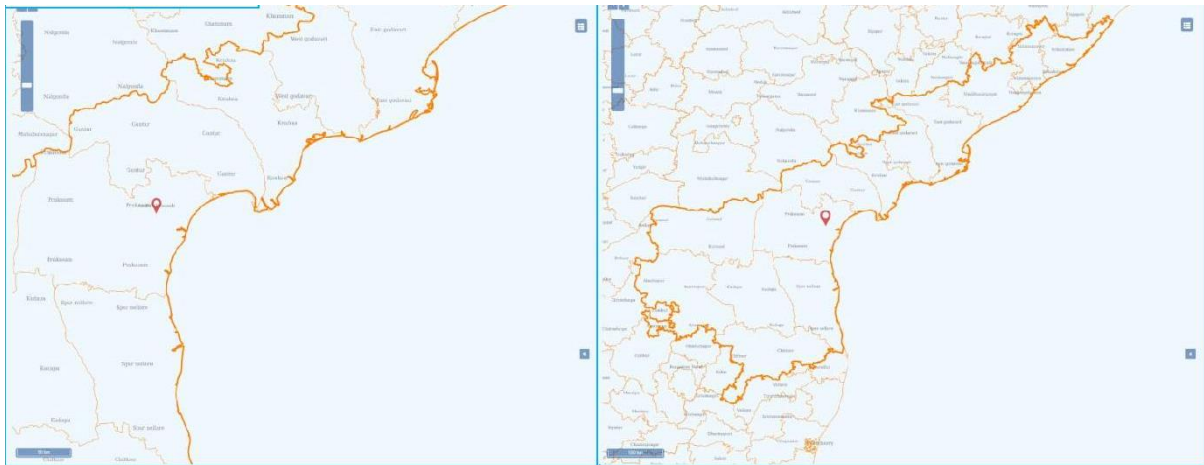


Figure 29 C : Zoom out tool

Zoom Out will enable the user to zoom out to one previous zoom level.

IV. Measurement Tools:

Measurement toolbox incorporated to measure distance and area on the map as shown in Figure 30 A, B & C

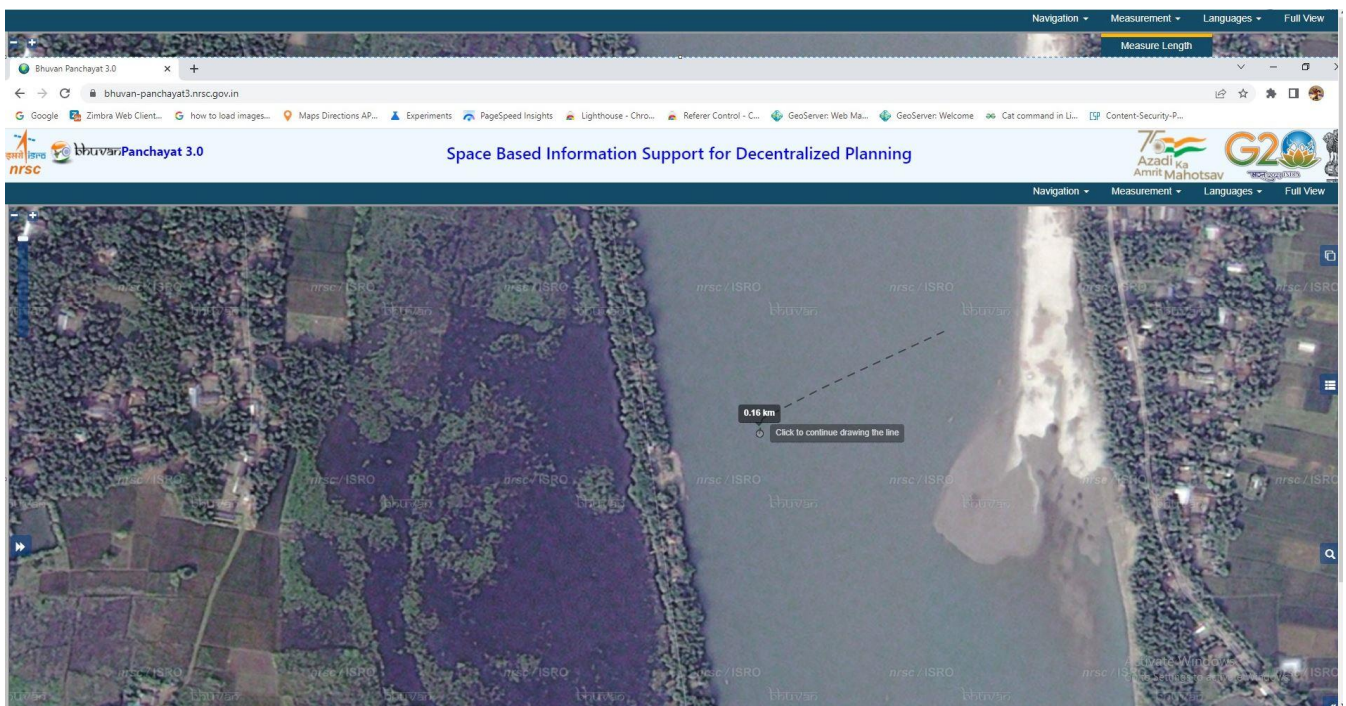


Figure 30 A : Distance tool

Measure Length will enable the user to measure the length of a particular asset (road track) or a water body (like river) and give the result in metric units.

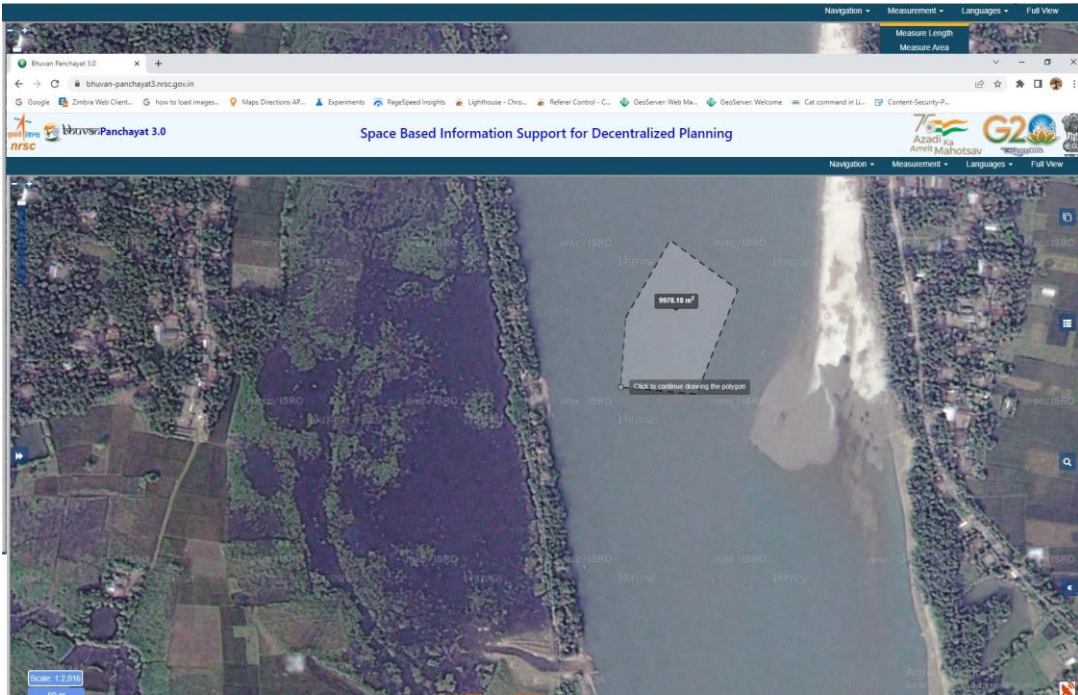


Figure 30 B : Measure tool

Measure Area will enable the user to measure the area of a particular polygon drawn on the map and give the result in metric units and is useful in getting the area of cadastral polygon.

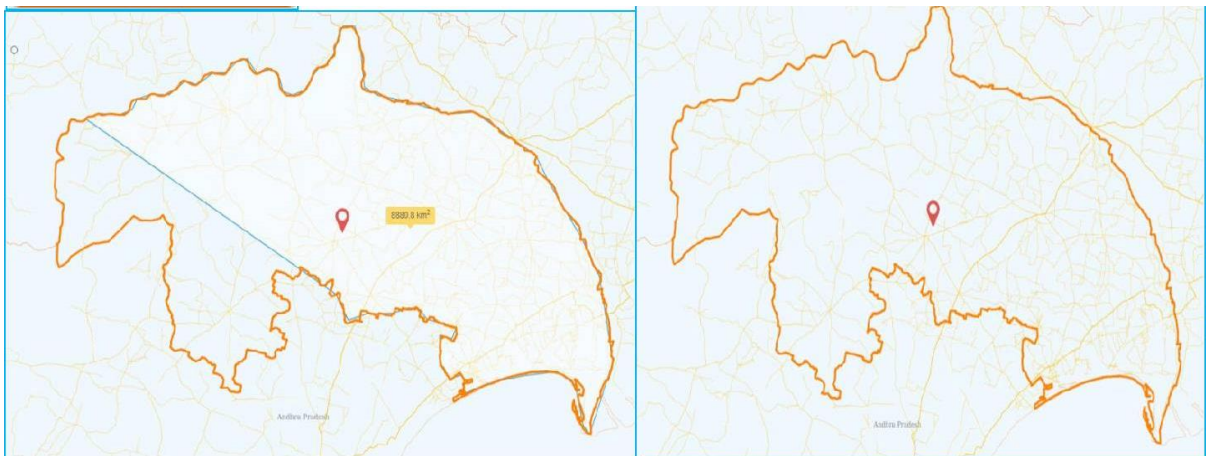


Figure 30 C : Clear tool

Clear will enable the user to clear on the map overlays and will render the map to its previous state.

V. Languages:

User can select the language of his choice from available 8 languages as shown in Figure 31.

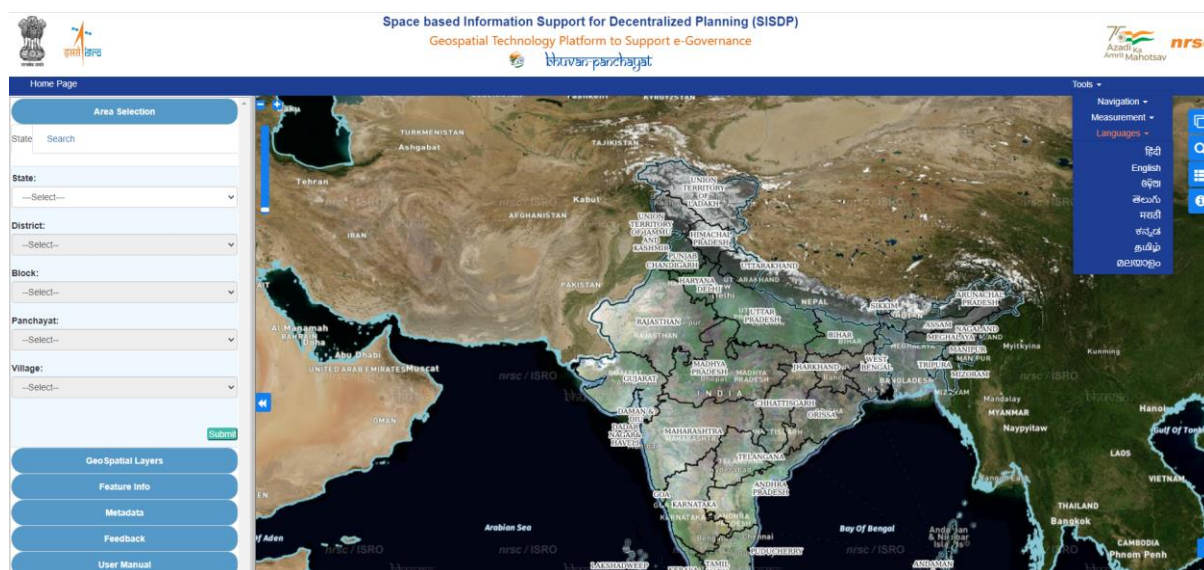


Figure 31: Language selection

Languages option is available to enable the user to visualize the portal in the regional language for better understandability and flow. This will encourage the users to freely visit the site and help in developmental activities across the states.

5.1.2 Data Availability

This section presents a comprehensive overview of the diverse data offerings within the Bhuvan Panchayat portal:

i. **Satellite Imagery:**

- Users can delve into high-resolution satellite imagery courtesy of NRSC Bhuvan. This includes recent high-resolution satellite imagery, data from 2016-17, Carto-2S, and imagery from 2009-10. MMI layers, encompassing both point data and base map data, further enrich the available information.

ii. **Administrative Boundaries:**

- Users have the flexibility to access data categorized by state, district, block, panchayat, and village. Additionally, administrative data at the cadastral level is also accessible.

iii. **Constituencies:**

- In the constituencies section, users can explore layers representing both assembly and parliament constituencies.

iv. **Infrastructure:**

- The infrastructure category provides access to road and rail data from SISDP Phase I and I

v. **Hydrology:**

- Users interested in hydrological data can access information related to watersheds and microwatersheds.

vi. **Thematic Layers:**

- This section offers access to thematic layers, including LULC (Land Use/Land Cover) Phase I & II data, Settlement Phase I & II data, Drainage Phase I & II data, and rivers data.

vii. **Assets:**

- The Assets section enables users to access information on amenities spanning across the entire country.

viii. **Profile:**

- In the Profile section, users can explore various profiles such as Gram Panchayat and regional profiles.

This comprehensive array of data ensures that users can explore and analyze information ranging from geographic features and administrative divisions to infrastructure, hydrology, thematic layers, assets, and specific profiles, providing a holistic understanding of the region and its characteristics.

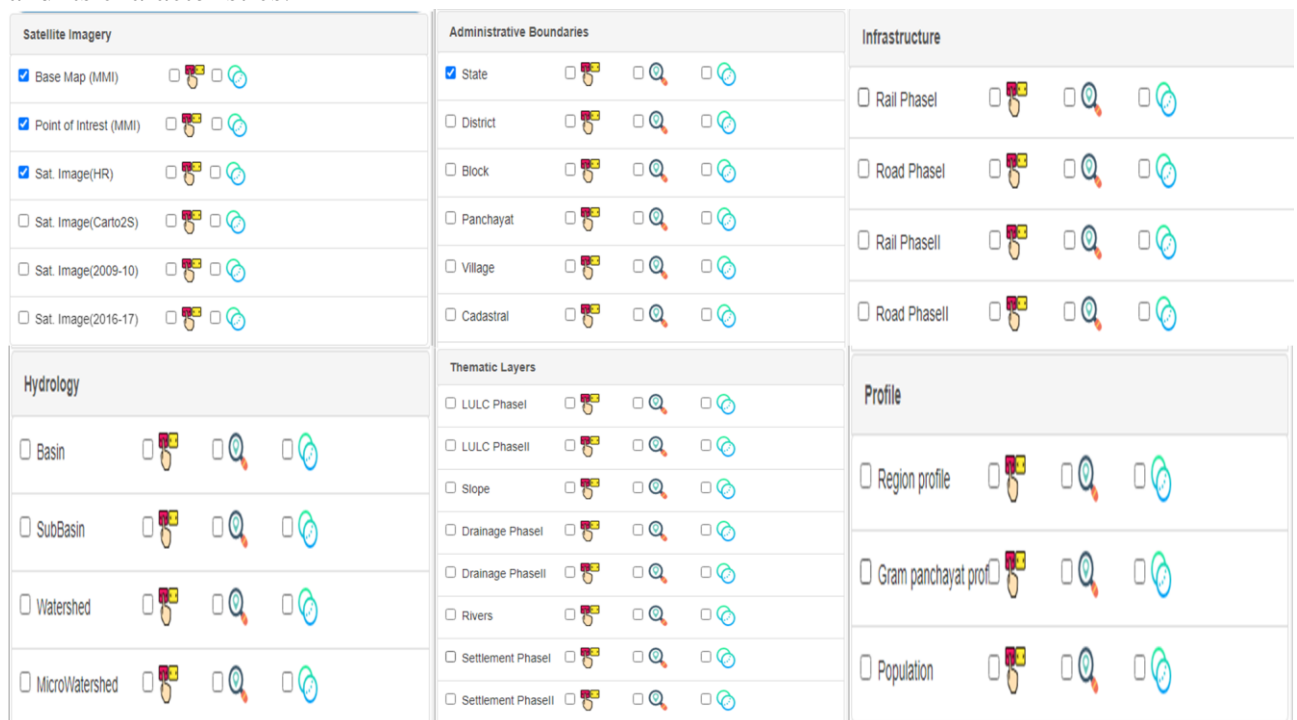


Figure 32: Data Availability in Bhuvan Panchayat

5.2 Tools and Utilities

5.2.1 Layer Widget:

Provision to add and integrate different base layers on the map viewer is available. Figure 33 shows enabling & overlaying of different layers of the selected area i.e., DakshinJagial, Roha, Nagaon, Assam.

I. In layers **enable** satellite layer:

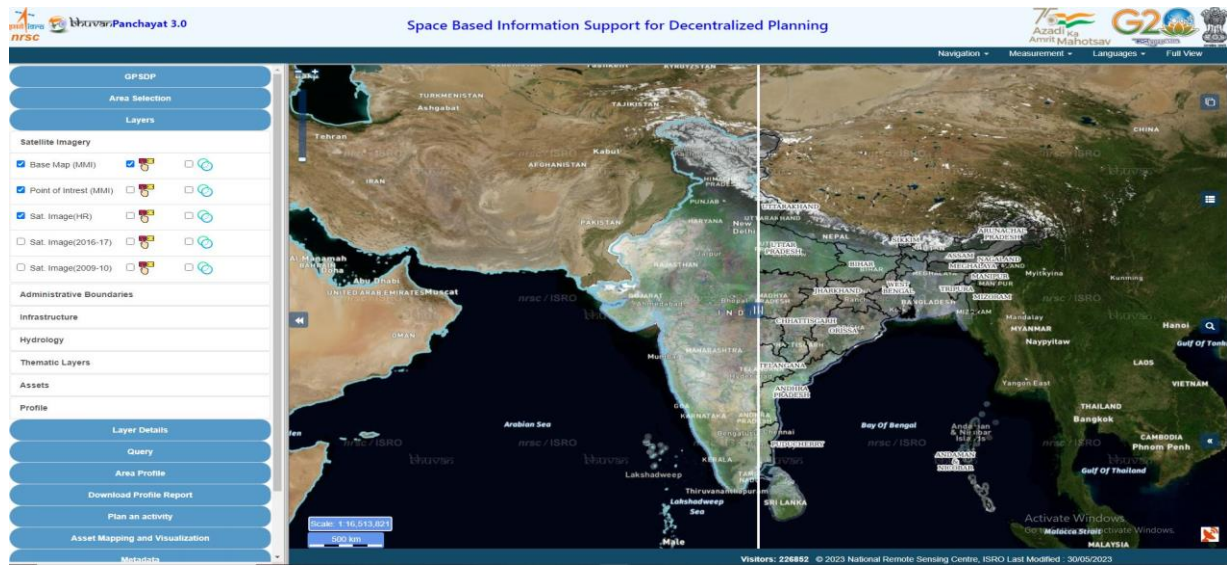



Figure 33: Multiple layers of an area on map viewer


- **Enable Transparency:** We can also set the intensity of Transparency of the layer.
- **Enable Swipe:** Swipe feature is available for better way of comparison for each and every layer.

II. In layers **enable** all Administrative boundaries: Figure 34 shows enabling admin layers.



Figure 34: Administrative layers on map viewer

- After enabling **click** on the  top right corner of the screen for the legend of the enabled layers.

Note: Click **Refresh** button  on the legend column on enable of each and every new layer.

III. In layers **enable** all Infrastructure layers: Figure 35 A , B&C shows infrastructure layers.

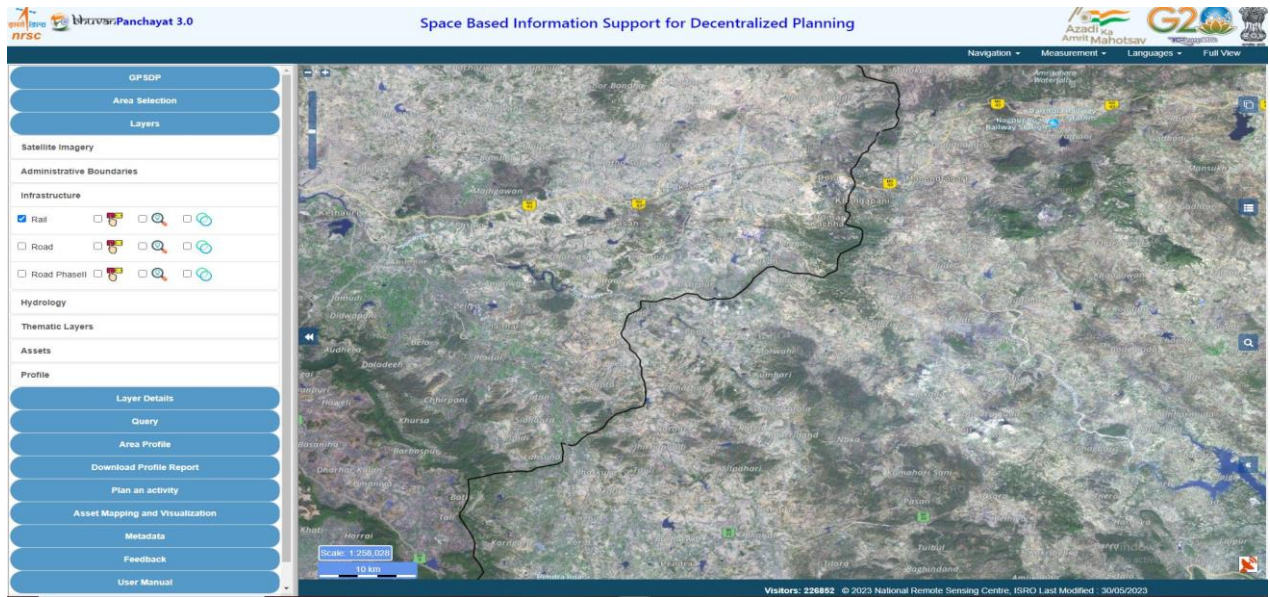


Figure 35 A: Infrastructure layers on to map viewer

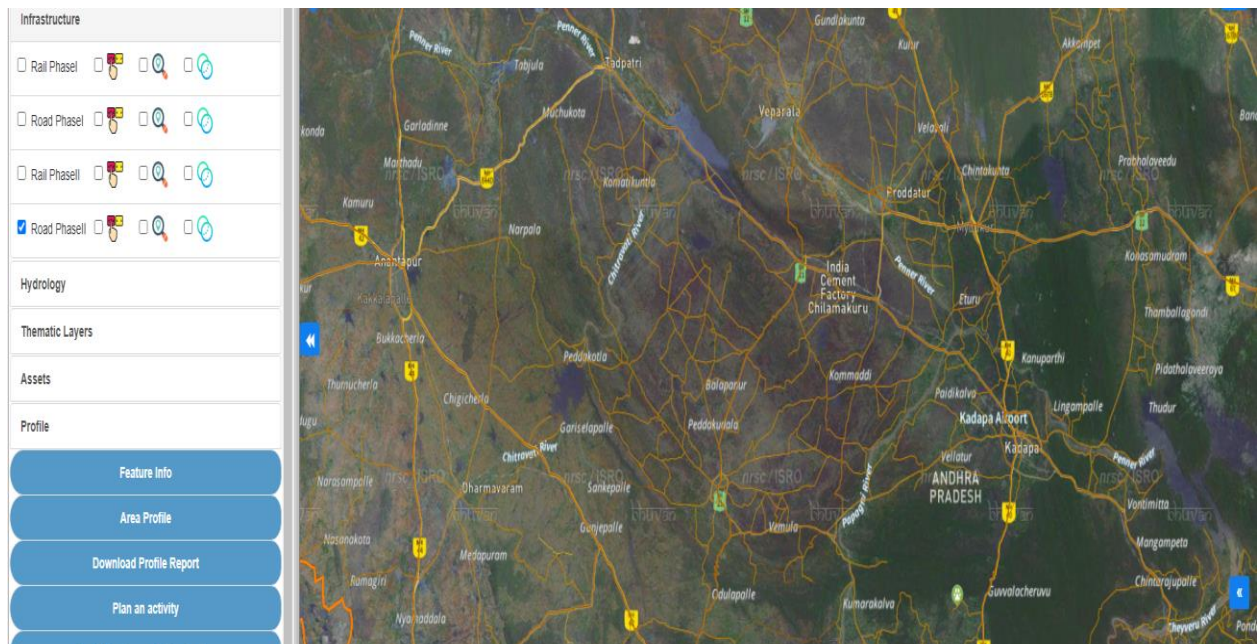


Figure 35 B :Infrastructure layers(Rail/Road) on to map viewer



IV. In layers go to thematic layers:

- a) LULC: LULC layers can be enabled on to map as shown in Figure 36.



- Enable LULC layer in Thematic

Figure 36: Selection of LULC layer for overlaying

On overlay of the layer:

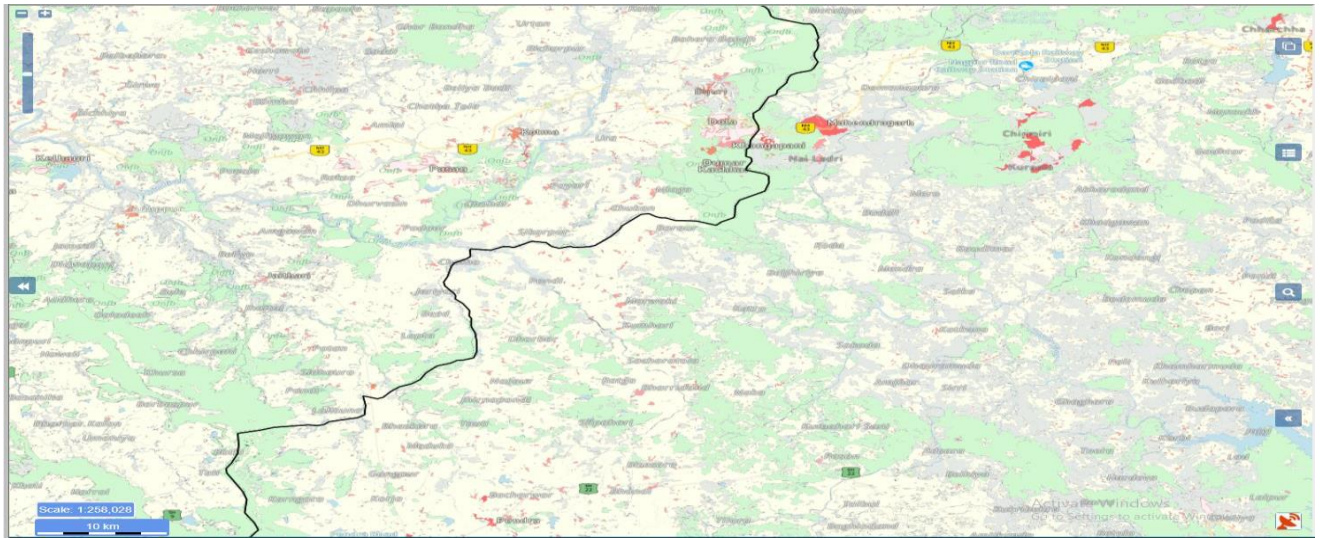


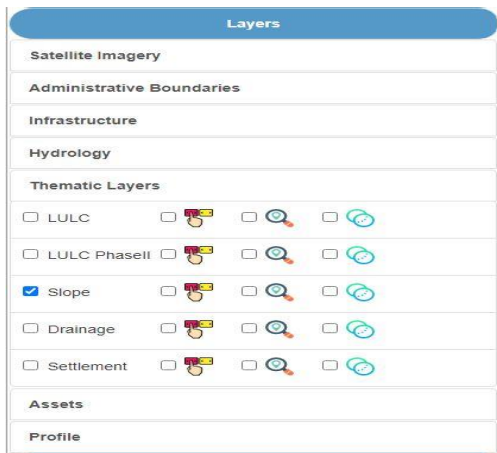
Figure 37 : Overlaying of LULC layers on to the map

Similarly we can overlay LULC-Phase-II data



Figure 37 A : Overlaying of LULC Phase-II data on to the map

b) SLOPE: Slope layers can be overlaid onto map as shown in Figure 38.



- Enable SLOPE layer in Thematic

On overlay of the layer:

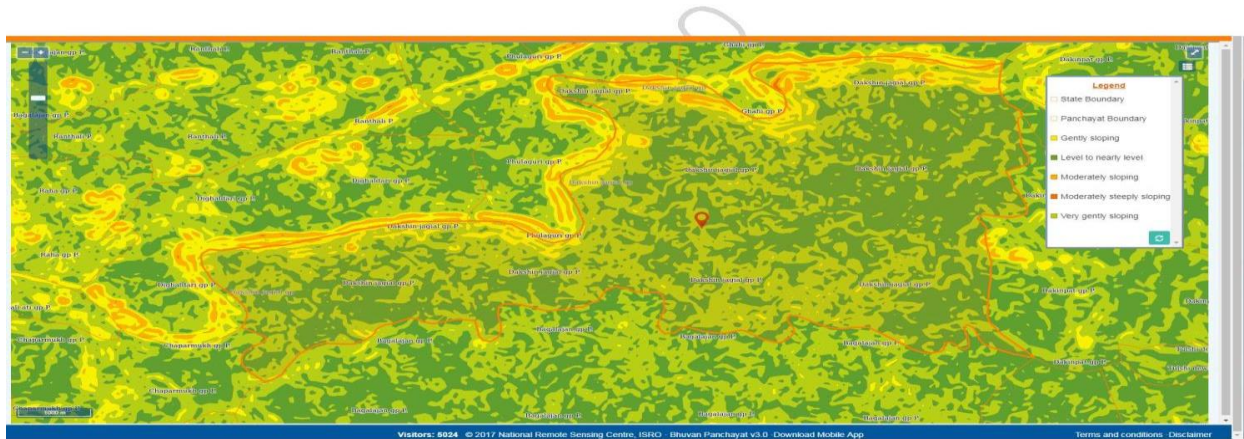
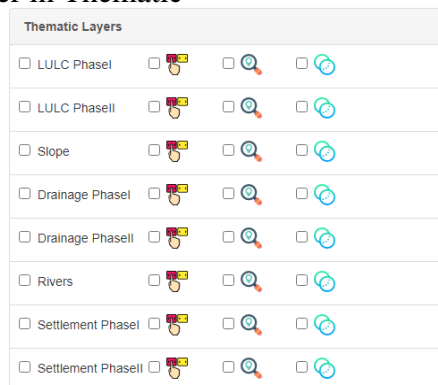


Figure 38 : Overlaying of SLOPE layers on to the map

C) DRAINAGE: Drainage layers can be overlaid onto map as shown in Figure 39.

- Enable DRAINAGE layer in Thematic

-



On overlay of the layer

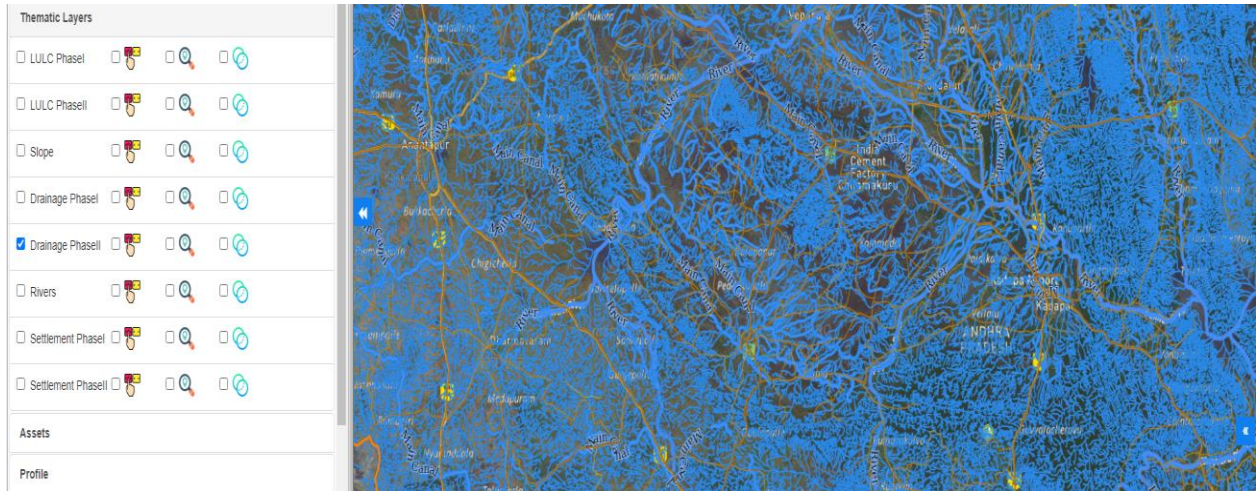
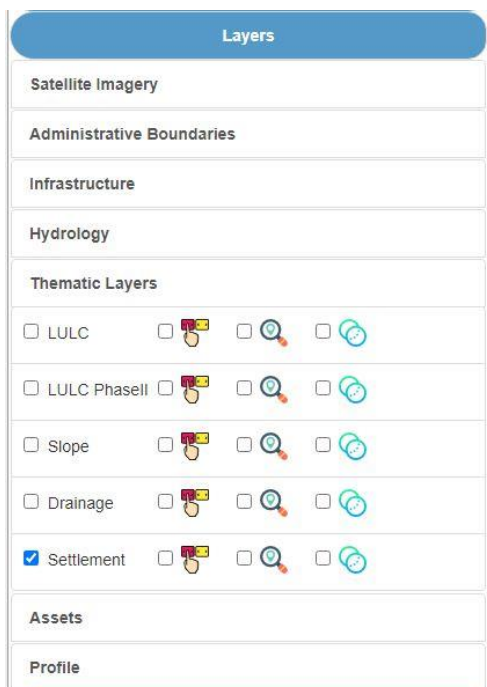


Figure 39: Overlaying of DRAINAGE layers on to the map

c) SETTLEMENT: Settlements layers can be overlaid onto map as shown in Figure 40



- Enable SETTLEMENT layer in Thematic layer

Figure 40:Enabling Settlement option

On overlay of the layer:

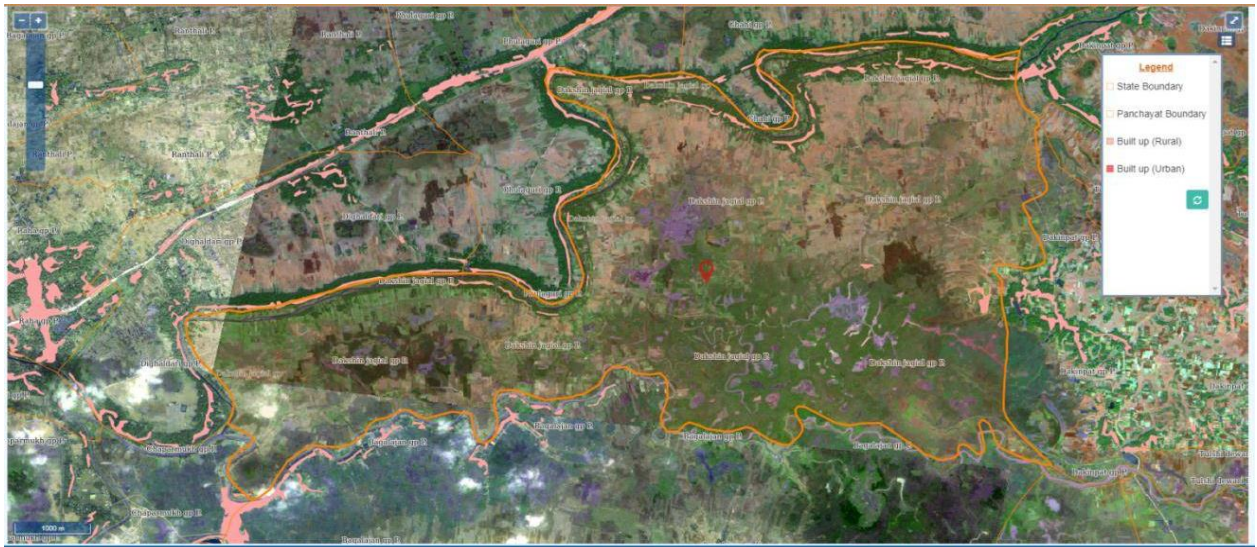


Figure 41: Overlaying of Settlements layers on to the map

V. In layers **enable** all Assets layers: Figure 42 shows all assets layer on to map.

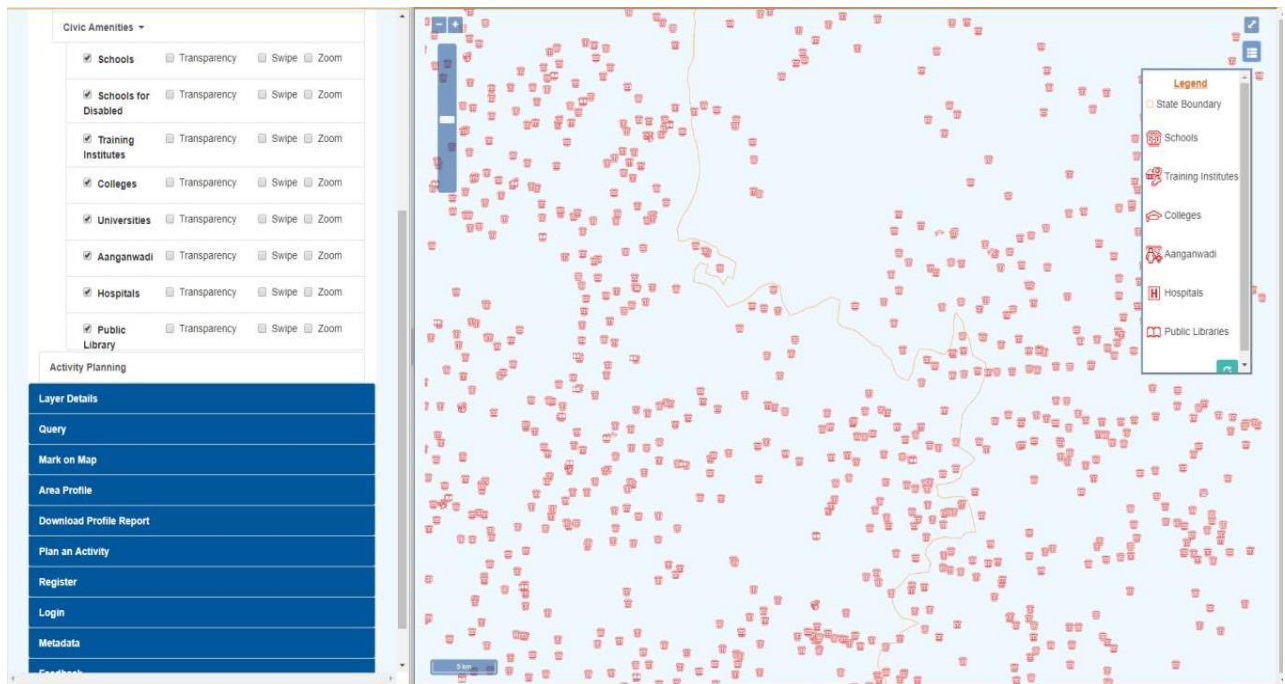


Figure 42: Overlaying of all Assets layers on to the map

5.2.2 Swipe/Transparency/Zoom out:

In this section we will discuss about Swipe/Transparency/Zoom out functionalities

1. Swipe:

- The Swipe functionality in geospatial applications allows users to interactively compare two different layers or time periods. By swiping across the screen, users can reveal or hide specific layers, enabling a side-by-side visual comparison. This feature is particularly useful for identifying changes in land cover, infrastructure development, or any other spatial variations.

2. Transparency:

- Transparency, in the context of geospatial data visualization, refers to the degree to which underlying map layers are visible. Users can adjust the transparency of a layer to overlay it on top of another while maintaining visibility of both. This feature is beneficial for analyzing spatial relationships, as it allows users to see how different layers interact without completely obscuring one another.

3. Zoom Out:

- Zooming out is a fundamental navigation feature in geospatial applications. It allows users to view a broader area on the map, providing context and a more comprehensive understanding of the spatial layout. Zooming out is particularly valuable when users need to explore relationships and patterns across larger geographic extents.

In summary, these functionalities enhance the user experience and analytical capabilities in geospatial data visualization. Swipe facilitates direct visual comparisons, transparency enables the simultaneous display of multiple layers, and zooming out provides a broader perspective for a more holistic understanding of spatial data. These features empower users to extract meaningful insights from complex geospatial information.

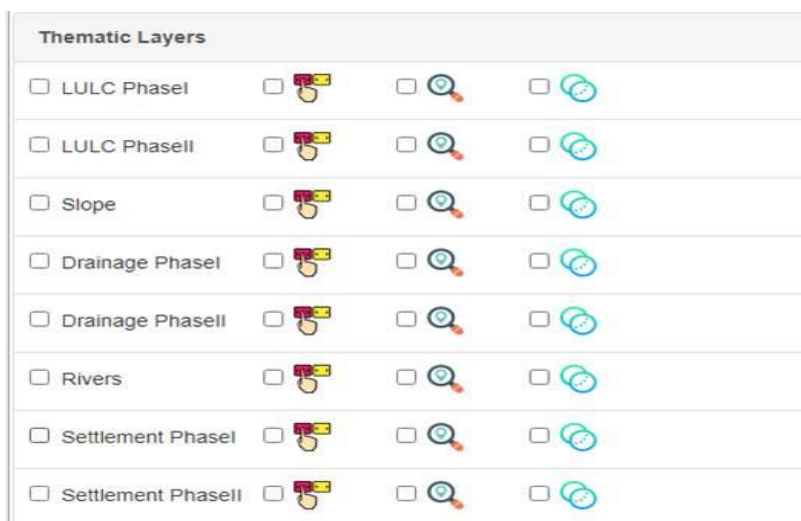


Figure 43 : Swipe/Transparency/Zoom out functionalities

5.2.3. Search Widget:



Figure 44: Search widget

This search option works same as “Search” option discussed earlier. Once the portal is opened user can directly go to search option and make use of it as shown in Figure44.

5.2.4. Scale:

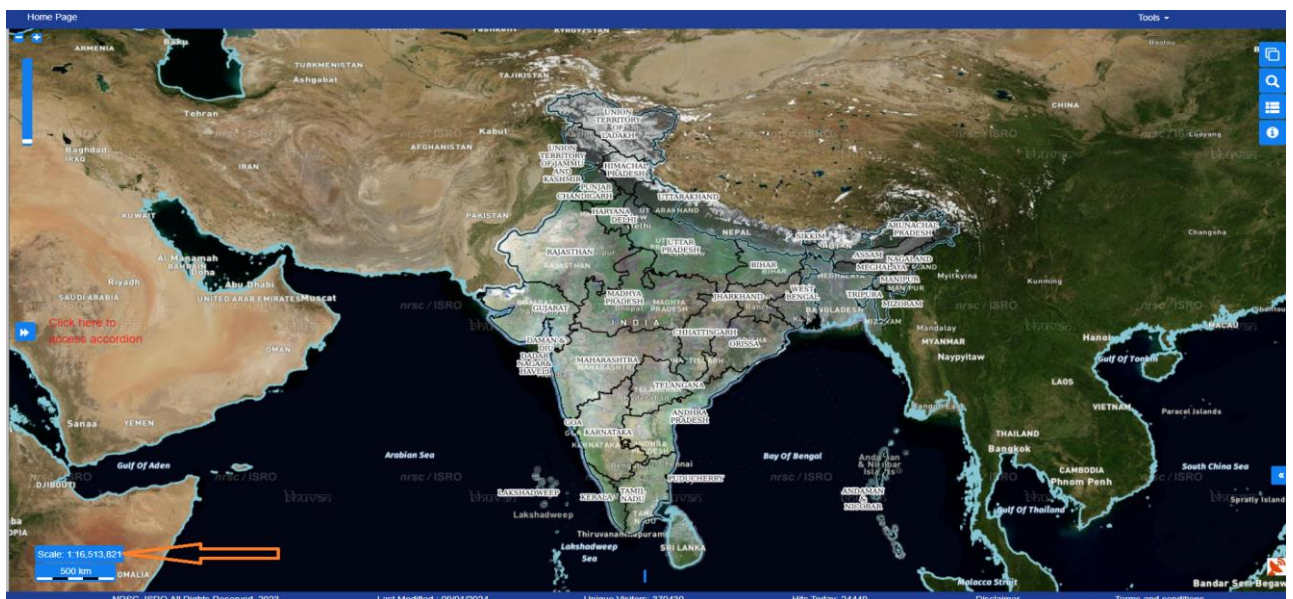


Figure 45:Scale

Located at the bottom left side of the interface, this option provides users with the current scale of view. It serves as a useful reference point, allowing users to understand the level of detail and zoom level of their current view as shown in Figure45. Specifically, for the SISDP Phase-II Roads data, the legend associated with it dynamically adapts and updates based on the scale displayed.

5.2.5. Scale Bar:

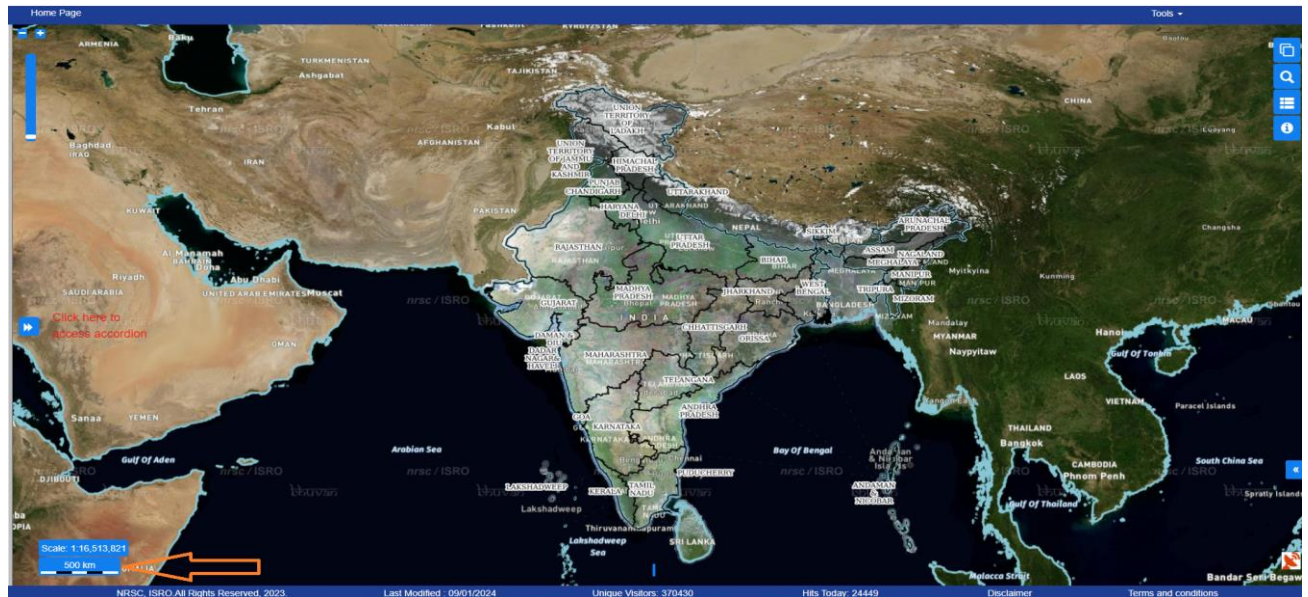


Figure 46 :Scale Bar

The scale bar in your portal provides a visual representation of distance or scale. It helps users accurately estimate distances on the map or spatial display, aiding in understanding the relative scale of features as shown in Figure46.

5.3 Advanced Tools:

5.3.1 Layers Widget:

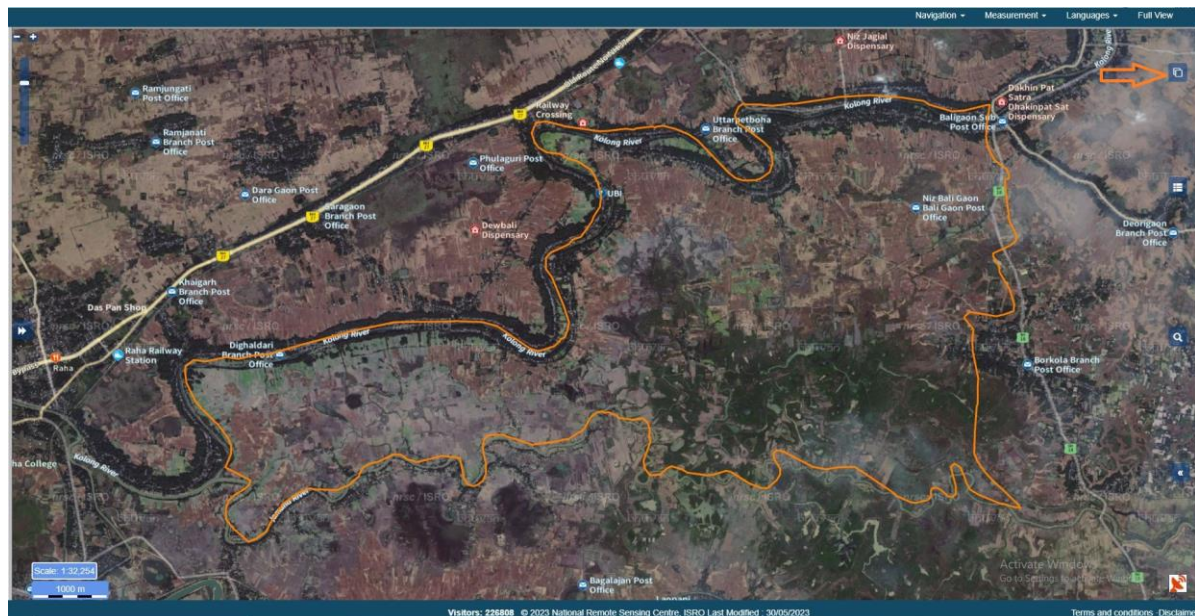
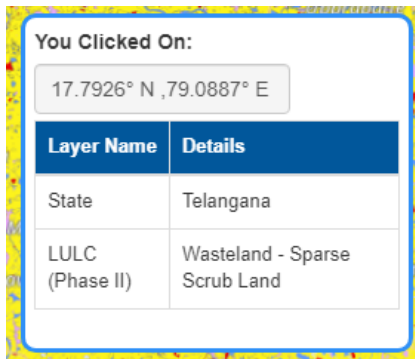


Figure 47: Layers widget

Introducing a new option that significantly improves user accessibility of portal. When selecting this option, users gain access to Baselayers comprising satellite data and MMI data. Furthermore, users can interact with administrative boundaries to view different boundary types. Moving beyond Baselayers and Administrative boundaries, users can delve into Thematic layers, which provide valuable insights into land use and land cover (LULC), slope, drainage, and other relevant information. Lastly, the infrastructure option enables users to visualize road and rail networks specific to SISDP data as shown in Figure 47.

5.3.2.Feature Info:



-Click on the map at any point on the map

User will be able to get all the layer details which are enabled in the layers module as shown in Figure 48.

Figure 48: Feature Info

5.3.3 Legend:

A legend tells a map reader the meaning of the symbols used to represent features on the map. Legends consist of examples of the symbols on the map with labels containing explanatory text. When you use a single symbol for the features in a layer, the layer is labeled with the layer's name in the legend. When you use multiple symbols to represent features in a single layer, the field you use to classify the features becomes a heading in the legend, and each category is labeled with its value. In this example we are demonstrating the display of LULC-Phase-II legend

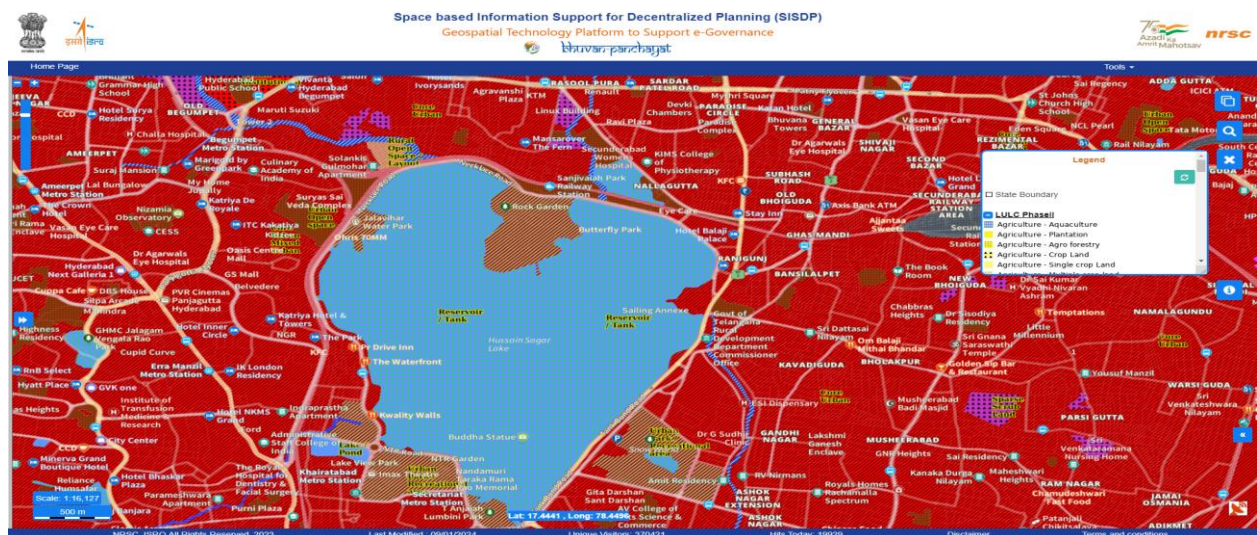


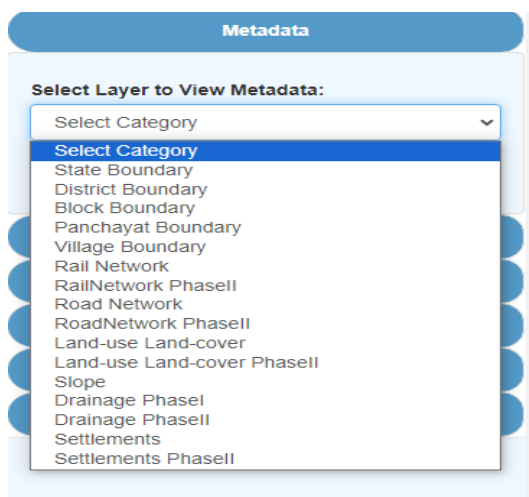
Figure 49: LULC Phase-II legend

5.5 Others:

In this section we discuss about Metadata, Feedback and Contact Us

5.5.1. MetaData:

Go to **Metadata module**.



- Select **Layer to view Metadata**, as shown in Figure 50.
- Selecting **District Boundary**.
- Metadata will be visible as shown in Figure 51 & 52.

Figure 50: Layers to view metadata

S.N	Field	Value
1	Title	LULC Phase-II
2	Satellite Data Used	Fused NCC (Cartosat 1 + LISS 4)
3	Satellite Data Year	2018-2023
4	Satellite Data Resolution	2.5m
5	Projection	Geographic Coordinate System (GCS)
6	Datum	WGS84
7	Scale	1:10,000
8	Year of Mapping	2018-2023
9	Source	Land Cover Database on 1:10,000 scale, SISDP Project, National Remote Sensing Centre, ISRO, Hyderabad
10	Corporate Name & Address	NRSC, Balanagar, Hyderabad
11	Purpose of mapping	To support the Panchayat Level Planning and Governance in India
12	Individual name	Dr. S.K. Srivastav

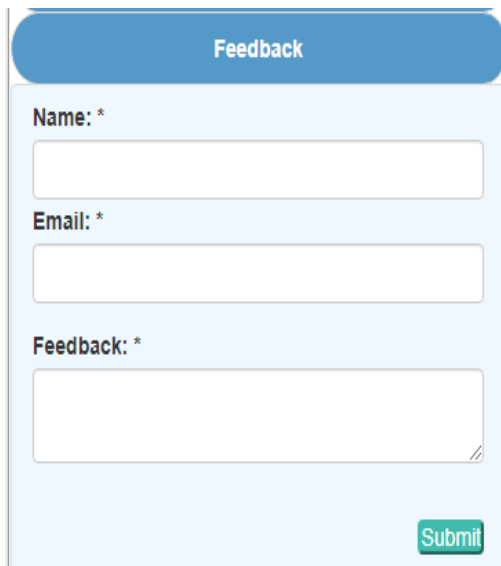
Figure 51: Metadata

13	Organisation name	NRSC
14	Position name	Project Director
15	Address	RRSC, NRSC ISRO, Hyderabad, Telangana-500037, India
16	Level of Classification	4
17	Classes	Level 1 with 7 classes, Level 2 with 27 classes, Level 3 with 41 classes, Level 4 with 89 classes
18	Geometry type	Polygon
19	Key words	10k, Bhuvan-Panchayat, Land Cover, SIS-DP, NRSC, ISRO

Figure 52: Metadata contd

5.5.2. Feedback

Go to **Feedback module.**



- Fill all the required fields to leave the feedback.
- Personalization option is also given for better understanding of the mentioned feedback -Click **Submit**, as shown in Figure 53.

Figure 53: Feedback Module

5.5.3. Contact Us

Go to **Contact Us module.**



- Contact Information is mentioned as shown in Figure 54.

Figure 54: Contact us